

Exhibit F

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**UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA**

IN RE: CENTURYLINK SALES
PRACTICES AND SECURITIES
LITIGATION

MDL No. 17-2795 (MJD/KMM)

Reply Expert Report of Michael L. Hartzmark, Ph.D.

May 4, 2020

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I. QUALIFICATIONS AND COMPENSATION

1. I am President of Hartzmark Economics Litigation Practice, LLC. My qualifications and remuneration for this matter are set forth in my Expert Report dated January 21, 2020 (the “Hartzmark Report” or “Opening Report”).¹

II. SUMMARY OF OPINIONS

A. Opinions I Continue to Maintain From my Opening Report

2. I have reviewed the Expert Report of Bruce Deal dated March 23, 2020 (the “Deal Report”)² and maintain the opinions set forth in my Opening Report,³ namely:

OPINION 1: Throughout the Class Period (March 1, 2013 through July 12, 2017),⁴ CenturyLink, Inc. (“CenturyLink” or the “Company”) common stock and 7.60% Senior Notes due September 15, 2039 (the “7.6% Note”) traded in efficient markets.⁵

OPINION 2: While I have not been asked to quantify actual damages, the calculations of damages for violations of Section 10(b) of the Exchange Act (and SEC Rule 10b-5) are subject to a common methodology and may be computed on a class-wide basis for both the common stock purchasers and the 7.6% Note purchasers.

¹ An updated *curriculum vitae* is attached to this Reply Report as **Appendix A**. Hartzmark Economics Litigation Practice, LLC is being compensated at a rate of \$700 per hour for my work in this matter. My compensation is not contingent on the outcome of this case in any way.

² I have also reviewed a transcript to Mr. Deal’s deposition taken on April 24, 2020 (“Deal Tr.”).

³ See Hartzmark Report, ¶10.

⁴ Consolidated Securities Class Action Complaint dated June 25, 2018 (the “Complaint”), p. 2.

⁵ In this Reply Report, I refer to the common stock and 7.6% Note collectively as the “CenturyLink Securities.”

B. Reply Opinions

3. Based on my review of Mr. Deal's report and deposition testimony, I have the following additional opinions in response to the opinions Mr. Deal expresses.

REPLY OPINION 1: Damages can be calculated in this case using a common damages methodology tied to Plaintiffs' theory of liability. Mr. Deal does not dispute that the out-of-pocket ("OOP") damages methodology that I describe in my Opening Report is virtually a universal standard and the appropriate methodology for calculating class-wide damages for claims under Section 10(b) of the Exchange Act or that it applies in this case. As I explained, the major input into that OOP damages methodology is the inflation ribbon (*i.e.*, the daily level of artificial inflation in CenturyLink's Securities during the Class Period) that will be applied class-wide to calculate individual investor OOP damages. Mr. Deal does not dispute that the inflation ribbon is common to the class.

REPLY OPINION 2: Mr. Deal's report and deposition testimony concerning my common damages methodology essentially amounts to an argument that it will be challenging to construct the inflation ribbon that will be applied class-wide to calculate individual investor OOP damages. This is incorrect; there are numerous economic and statistical tools that can be used to assist the trier of fact in determining how to construct the inflation ribbon. Based on my experience and my discussions with Plaintiffs' Counsel, my understanding is that Mr. Deal's argument is irrelevant to class certification because issues concerning the construction of the inflation ribbon are issues that are common to the class.

REPLY OPINION 3: Mr. Deal's report and related analyses do not demonstrate an absence of price impact. As his report and deposition testimony make clear, Mr. Deal was not engaged to demonstrate, nor does he, offer any opinion that there is a lack of price impact on the CenturyLink Securities' prices from the misrepresentations and omissions alleged in the Complaint (hereinafter referred to in combination as "misstatements"). As demonstrated below, the analyses Mr. Deal does provide are insufficient to show that Defendants' misstatements did not impact

the prices of the CenturyLink Securities. To the contrary, Mr. Deal's analyses support the opinion that there is no evidence of a lack of price impact.

III. SUBJECTS ON WHICH MR. DEAL OFFERS NO DISPUTE

4. Before I discuss my responses to specific issues raised in the Deal Report, it is important to point out that there are a number of important subjects where Mr. Deal does not dispute the opinions presented in my Opening Report.

5. Mr. Deal does not dispute that CenturyLink common stock and the 7.6% Note traded in efficient markets. Indeed, Mr. Deal states: "I agree with [Hartzmark's] market efficiency findings"⁶ Mr. Deal also testified as such.⁷

6. Mr. Deal does not dispute that the out-of-pocket ("OOP") damages methodology that I describe in my Opening Report is virtually a universal standard, "typically used" and the appropriate methodology for calculating class-wide damages for claims under Section 10(b) of the Exchange Act, or that it applies in this case. As explained in my Opening Report, I would calculate OOP damages by using the results of an event study along with, among other things, determinations of the factfinder and firm-specific information, to construct inflation ribbons (a time-series of daily artificial inflation for each of the CenturyLink Securities) that measure how much the alleged misstatements inflated the CenturyLink Securities' prices on each day during the Class Period.⁸ I further explained that these inflation ribbons, along with the actual trading activity of the Class members, would be used as inputs into my common damages methodology (or formula) to calculate individual investor damages in a mechanical fashion.

⁶ Deal Report, ¶185.

⁷ Deal Tr. 167:13-19 (emphasis added) ("Q. Mr. Deal, I'm correct in stating that you don't criticize Dr. Hartzmark's opinions regarding the efficiency of the market for ... stock or the 7.6 percent bonds, right? A. **I agree with that. I don't have any dispute with his conclusion** that they both traded in efficient markets.").

⁸ As a financial economist, I generally would begin to estimate inflation by using an event study. Others, especially those who rely on the principles of accounting, might use alternative techniques to estimate inflation.

7. Consistent with the common damages methodology I opined can be applied class-wide, in his report Mr. Deal agrees that:

Economic harm results from the difference in per-share inflation for purchasers of the security.⁹

During the period between the false inflation and the corrective disclosure, shareholders who bought the stock and held through the corrective disclosure may have realized a loss caused by the false information, when they buy at a price that includes inflation and later sell or hold until the inflation decreases or is eliminated. The amount of inflation present in the stock price, if any, during the class period is often referred to as the “inflation ribbon.”^{10,11}

8. Needless to say, these statements clearly summarize and are entirely consistent with the common damages methodology described in my Opening Report.¹² They also demonstrate that Mr. Deal and I agree that there are no individualized issues that emerge from the application of this common OOP damages methodology, and that the

⁹ Deal Report, ¶3.

¹⁰ Deal Report, ¶5.

¹¹ Indeed, in his report Mr. Deal takes what he characterizes as a “classic” securities fraud case (Deal Report, ¶106) — which I assert is not divorced from this matter— and suggests damages can be calculated using the OOP methodology.

Mr Deal testified as such as well. Deal Tr. 215:20-216:20 (objection omitted) (“Q So let me take that. Whether or not the corrective disclosure dates involve disclosure of truly corrective information, actual corrective disclosures I think is the term you used, or were prompted by FUD, that issue is common to all class members, right? A If I understand your question, I think the answer is probably yes in the sense that with the out-of-pocket type measure, you are looking at the price of the security that’s faced by all investors. So whether or not there’s -- any of those are corrective disclosures or those price drops can be considered to be corrective disclosures, that’s a question about the impact on the price specific to the allegations in the lawsuit that will affect all investors. I think that’s your core question. I don’t think there’s, you know, one group of investors in, you know, California that are going to be differently affected by a group of investors in Pennsylvania. I’m using those obviously conceptually. I agree with that. I think that was your question.”).

¹² Hartzmark Report, Section X.

same methodology would be utilized whether damages were being calculated in a securities class action or an individual lawsuit.¹³

IV. MR. DEAL’S OPINIONS ARE BASED UPON HIS INCORRECT UNDERSTANDING OF PLAINTIFFS’ AND DEFENDANTS’ BURDENS

9. As discussed below, Mr. Deal’s primary criticisms of the opinions expressed in my Opening Report appear to be that my analyses do not prove price impact, and that I have not explicitly demonstrated how I would construct the inflation ribbons given the specific factual allegations at issue in this case.¹⁴

10. Mr. Deal’s assignment bears this out. In his deposition, Mr. Deal clarified the scope of his assignment to be:

[H]aving two parts to it. So the second part ... I’ve been asked to look at the specific statistical analysis that [Dr. Hartzmark] has done with regard to these event studies and abnormal return calculations ... my [first] assignment is broader there which is to say to both describe the economic analyses and the economic framework and damages framework that I understand to be

¹³ I have been engaged in numerous opt-out matters wherein the issues associated with damages primarily pertain to the construction of an inflation ribbon for the individual investor.

¹⁴ Mr. Deal’s ambiguous terminology and critique do not suggest that the damages methodology is not commonly used and inappropriate, but instead Mr. Deal is really stating, and I agree, that to implement the out-of-pocket method in a loss causation or damages report certain common techniques will be used to measure daily levels of alleged inflation in the CenturyLink Securities’ prices throughout the proposed Class Period attributable to Plaintiffs’ theory of liability. Examples abound in his report. For example: “an articulation of how a common damages model will be developed” (¶6); “model capable of reliably measuring any common inflation” (¶7); “not articulated how a common model would allow for parsing and scaling of alleged inflation such that a common method could be used to calculate damages” (¶10); “neither the start, the end, nor the size of the inflation ribbon is subject to a common methodology that can be reliably computed on a class-wide basis” (¶32); “Dr. Hartzmark has not conducted any analysis to even plausibly parse the effect of the alleged misrepresentations or categories of misrepresentations from non-false information, which would be necessary to connect any statements to a common measure of damages or price inflation, nor has he outlined a methodology for doing so” (¶60) and many others. These are all issues associated with loss causation because they concern how much inflation was caused by the alleged fraud. For present purposes, I note that whatever techniques are used to calculate the inputs (*i.e.*, construction of the “inflation ribbon” given the alleged fraud), they will be applied on a class-wide basis.

appropriate and needed in ... a securities class action. And to also then do work to identify challenges doing that type of work, whether it's possible or likely to be possible, doing some price impact analyses on the inflationary work... and I've given quite a bit of analysis to identify issues and challenges and whether it's likely that it can or can't be done accurately. But it's really the absence of any analysis that I'm filling or partially filling on the front end of my opinions.¹⁵

A. Mr. Deal Does Not Attempt to Demonstrate a Lack of Price impact

11. In my reading of the Deal Report and Mr. Deal's deposition testimony, it appears that, based on Mr. Deal's interpretation of Plaintiffs' purported burden in securities class action litigation (or possibly the guidance from Defendants' Counsel), he asserts that demonstrating price impact could be difficult. Specifically, Mr. Deal suggests that additional factors may have contributed to the price movements of CenturyLink Securities on the misstatement days or the price declines on the corrective disclosures, and that Plaintiffs have not adequately accounted for these purported "complexities" in demonstrating that the misstatements had a price impact.

12. I understand from Plaintiffs' Counsel that, as a legal matter, Mr. Deal's criticism in this regard is misplaced, as it is not Plaintiffs' burden to demonstrate price impact. Rather, given that Mr. Deal and I both agree that the markets for CenturyLink Securities were efficient, it is Defendants' burden to fully sever the link between the misstatements and any impact on price. As a matter of economics, Mr. Deal does not even attempt to demonstrate a lack of price impact and has admitted he has not performed the analysis necessary to do so. Further, nothing in Mr. Deal's report or analyses demonstrate

¹⁵ Deal Tr. 62:8-63:14. The clarification of Mr. Deal's assignment and the issues I am to address were necessary, as the Deal Report, ¶2 and ¶25 have two ambiguous paragraphs describing his assignment ("I have been asked to address certain economic and financial issues in connection with this Action. I address these topics and provide supporting analysis in the body of this Report....I have been asked to address a number of economic issues in this Report. I focus first on the economic framework discussed above, which is completely absent from the Hartzmark Report. I then provide analysis related to his actual opinions, including analysis and critique of his event study methodology for both CenturyLink's equity and its 7.60% Notes.").

a lack of price of impact and, to the contrary, indeed suggest there is no evidence of a lack of price impact.

B. No Individualized Issues Emerge from Mr. Deal's Opinions Related to Damages

13. Mr. Deal also opines that “it is necessary to provide an articulation of how a common damages model will be developed that will incorporate the complexities of the case.”¹⁶ Based on this interpretation of legal requirements, Mr. Deal opines that I purportedly failed to present in my Opening Report a “model [] capable of measuring only those damages arising from Plaintiffs’ theory of liability given the particular facts and circumstance of the specific case at hand.”¹⁷ Specifically, Mr. Deal opines that because of certain purported “complexities”¹⁸ specific to this CenturyLink matter, it will be challenging, if not impossible, to construct the actual inflation ribbon.

14. I understand from Plaintiffs’ Counsel that Mr. Deal’s interpretation is incorrect as to Plaintiffs’ burden at this stage of the litigation. As a matter of economics, Mr. Deal is wrong that the common damages methodology described in my Opening Report cannot be applied class-wide to calculate individual investor damages. In referring to “complexities,” Mr. Deal is opining that it will be difficult to perform a damages or loss causation analysis. He goes a step further and suggests that at this class certification stage of the litigation I need to describe in-depth the tools and techniques that are generally-accepted and commonly-utilized to construct an inflation ribbon, such that the ribbon would

... incorporate the complexity of the allegations in this Action
 ... be scaled to vary over time based on the ... alleged
 inflationary misstatements ... be further scaled to account for
 the alleged “low cramming” period in the middle of Class
 Period ... be parsed to account for the five different categories
 of alleged misrepresentations ... be scaled to vary across the ...

¹⁶ Deal Report, ¶6.

¹⁷ Deal Report, ¶6.

¹⁸ Deal Report, ¶6.

alleged corrective disclosure dates ...[and] account for the FUD.¹⁹

15. As a general matter, the purported “complexities” are hardly unique to this CenturyLink matter; in fact, these same issues associated with Mr. Deal’s opinion about the challenges of constructing an actual inflation ribbon have become boilerplate Defendant responses in securities class actions. Mr. Deal’s criticism that I failed to account for the purported “complexities” that will be “challenging” when, at the loss causation and damages stages, the expert economist has to disaggregate price reactions (*i.e.*, parsing to separate the price reaction caused from the disclosure of alleged fraudulent information from the price reaction caused from the disclosure of non-fraudulent information), vary inflation levels over time (*i.e.*, scaling to account for how the inflation caused from the disclosure of alleged fraudulent information fluctuates) or otherwise separate price movements caused by fraudulent disclosures versus other non-fraudulent factors, clearly represent issues that are quintessential loss causation inquiries because they are focused on the causal relationship between the amount of the price movements and the variation in price levels caused by the misstatements or the revelation of the truth. In my experience as a testifying expert, these issues of parsing, scaling, multiple allegations, different categories of misrepresentations or omissions, and other questions Mr. Deal raises are all issues concerning the construction of the inflation ribbon and are therefore issues that are common to the class.²⁰ Thus, no individualized issues emerge based on Mr. Deal’s opinions and analyses.

16. As for his secondary opinion related to “specific statistical analysis” in my “event studies” and resulting abnormal returns (*i.e.*, the measured daily price changes in the CenturyLink Securities after accounting for market and industry effects), none of the purported “technical problems with [my] event study,”²¹ he discusses would materially

¹⁹ Deal Report, ¶186 (emphasis omitted).

²⁰ Mr. Deal appears to agree that the issues will be common to all investors, especially as it relates to FUD. *See*, Deal Tr. 215:20-216:20.

²¹ Deal Report, ¶105.

alter my opinion that there is ample evidence that the alleged misstatements in this case had price impact, and that a common damages methodology can be developed for the CenturyLink Securities at issue in this case. Rather, the technical issues he discusses will be addressed by expert opinions related to materiality, loss causation and damages at later, appropriate stages of the case, when discovery is complete.

V. MR. DEAL DOES NOT OFFER AN OPINION, NOR ANY EVIDENCE, THAT THERE IS A LACK OF PRICE IMPACT

17. Plaintiffs' Counsel has informed me that the Supreme Court held in *Halliburton II* that "defendants must be afforded an opportunity before class certification to defeat the presumption [of reliance] through evidence that an alleged misrepresentation did not actually affect the market price of the [security]." ²² Critically, Mr. Deal does not opine that the alleged misrepresentations in this case had no effect whatsoever on the price of CenturyLink Securities—nor could he, as the analyses he conducted do not (and cannot) support that definitive and empirically-based conclusion. ^{23,24}

18. Rather, Mr. Deal attempts to show, through purported analyses of stock price response on misrepresentation, omission and corrective disclosure days, that price impact may be difficult to prove. He attempts to do this by arguing that I failed to account for the complexities of parsing, scaling, or otherwise separating price movements caused by fraudulent disclosures versus other non-fraudulent factors. But Mr. Deal's analysis –

²² *Halliburton Co., et al. v. Erica P. John Fund, Inc.*, 134 S.Ct. 2398, 2417 (2014) ("*Halliburton II*").

²³ Mr. Deal has not made any attempt to separate the price impacts of the fraudulent from the non-fraudulent information. Deal Tr. 131:8-14 ("Q Okay. And like you just mentioned, it's very -- or you were saying it's difficult to parse those different effects out, and that's not something you attempted to do here in your report, right? A I certainly didn't attempt to literally do the parsing and quantify that.").

²⁴ Indeed, Mr. Deal admits he was not identifying price impact because he understands that to be the Plaintiffs' burden. Deal Tr. 65: 13-20 ("13 Q So were you given the assignment of figure out whether it's possible or likely to be possible, you know, to, like you said, to do a damages model and to show price impact? A I certainly wasn't asked to develop all the way through a methodology to identify price impact. That's the plaintiffs' burden, as I understand it, in these matters.").

which is clearly focused on the issue of whether and how much a particular price reaction is caused by the revelation of the truth concerning a particular misstatement (as opposed to confounding information) and how that impact would vary over time – is a *quintessential loss causation analysis* because it is *focused on the causal relationship between the amount of the price movements and the variation in price levels caused by the misstatements or the revelation of the truth*. Moreover, by assuming that parsing or scaling is necessary for Plaintiffs to undertake at this class certification stage of the litigation, Mr. Deal has implicitly demonstrated that the alleged misstatements and alleged corrective disclosures caused at least a portion of the price movements (*i.e., there is no evidence of the absence of price impact from the misstatement or alleged corrective disclosures*).

19. My specific criticisms of Mr. Deal’s Back- and Front-End price impact analyses are set forth below.

A. Mr. Deal’s Conclusion that the Alleged Back-End Corrective Disclosures Are Not Actually Curative is Flawed and Unreliable

20. In this action, Plaintiffs allege the truth concerning CenturyLink’s sales practices and their impact on the Company’s financial condition that was concealed during the Class Period were revealed in a series of corrective disclosures. In the Memorandum related to Defendants’ Motion to Dismiss, the *CenturyLink* Court described the corrective disclosures as follows:

[T]he Complaint alleges that CenturyLink’s cramming was first revealed on June 16, 2017, when *Bloomberg* reported that Heiser had filed a whistleblower complaint claiming that she was fired after raising concerns about cramming with Post. (Compl. ¶¶ 152-54.) The article noted that the alleged cramming was widespread with unauthorized fees in the “many millions.”²⁵

On June 19, 2017, Bloomberg reported on a consumer class action lawsuit on behalf of “potentially millions” of

²⁵ CenturyLink Memorandum of Law & Order, dated July 30, 2019 (“MTD Order”), p. 47.

CenturyLink customers who had been defrauded through billing misconduct, which caused another statistically significant share decline of 1.4%. (*Id.* ¶¶ 158, - 160.)²⁶

On July 12, 2017, the Minnesota Attorney General disclosed that, based on a year-long investigation, it had filed a lawsuit against CenturyLink that provided detail concerning CenturyLink's practices and their financial impact. (*Id.* ¶¶ 163-68.)²⁷

21. In my Opening Report (**Appendix C** and **Appendix E**), I presented empirical information related to the calculation of all the abnormal returns throughout the Class Period, including on the dates the Complaint alleges were dates with corrective disclosures: Friday, June 16, 2017; Monday, June 19, 2017; and July 12, 2017.²⁸ The alleged stock-price effects in response to these alleged corrective disclosures occurred on June 16, 2017, June 19, 2017, and July 12, 2017.²⁹

22. Mr. Deal utilizes a similar underlying empirical model to undertake his event study. Both of our event studies concluded that the price responses to the information disclosed in the corrective disclosures were highly statistically significant following the *Bloomberg* news story on Friday, June 16, 2017 at 1:50 p.m. (Eastern Time)³⁰ and the announcement that the Minnesota Attorney General had filed a lawsuit against CenturyLink on Wednesday July 12, 2017 at approximately noon (Eastern Time).³¹ Mr.

²⁶ MTD Order, p. 47.

²⁷ MTD Order, p. 47.

²⁸ Complaint ¶¶152, 158, 163.

²⁹ Complaint ¶¶154, 160, 171.

³⁰ "CenturyLink Is Accused of Running a Wells Fargo-Like Scheme," *Bloomberg News*, June 16, 2017, 1:50 p.m. CenturyLink's stock price reacted rapidly, and the abnormal return for the day of 4.82% is highly statistically significant (with a p-value below 0.01, which denotes statistical significance with greater than 99% confidence).

³¹ Complaint, ¶18. "*Minnesota AG Filed Suite vs CenturyLink on Billing Issues," *Bloomberg News*, July 12, 2017, 12:04 p.m. CenturyLink's stock price declined, with an abnormal return of -4.19%, which is also statistically significant with a p-value below 0.01, denoting statistical significance with greater than 99% confidence.

Deal also agreed that, in my event study, the additional information disclosed after the close of trading on Friday June 16, 2017 and on Monday June 19, 2017³² resulted in a price response on Monday, June 19, 2017, which he describes as having “weak statistical significance.”³³ That both Mr. Deal and I find two of the three corrective disclosure dates to be statistically significant strongly supports a finding of price impact.

23. Nevertheless, Mr. Deal opines that, for the three alleged *Back-End corrective disclosures* (made on June 16, 2017, June 19, 2017 and July 12, 2017), “there are many reasons why it is **far from certain that these are**, in fact, **curative disclosure** dates that **contain any actual news** of one or more categories of fraud.”³⁴ Mr. Deal lists five reasons that purportedly support this opinion,³⁵ but these conclusions can really be distilled into two general categories: (1) the alleged corrective disclosures are not curative; and (2) there are certain technical considerations Mr. Deal believes are inappropriate in my event study — most importantly the length of time used to evaluate the reaction of the price to the news (*i.e.*, the event window). I disagree with Mr. Deal’s reasoning, and am of the opinion that Mr. Deal’s analysis does not show an absence of price impact.

***1. Analyst Reaction and Other Documentary Evidence Shows
The Three Alleged Back-End Corrective Disclosures Had Price
Impact***

24. Contrary to Mr. Deal’s conclusion, analyst reaction to the corrective disclosures supports that they revealed new, material information to the market, as further described below.

³² Complaint, ¶266 claims there were numerous news stories, analyst reports and “reports of consumer class actions alleging systemic billing misconduct.”

³³ Deal Report, ¶36. (“June 19, 2017, has weak statistical significance in Plaintiffs’ expert’s event study model...”) Using his own specification, Mr. Deal observes that on Monday June 19, 2017 there is “no statistical significance.” This difference will be briefly discussed below. However, for the purposes of class certification, the differences are irrelevant.

³⁴ Deal Report, ¶36 (emphasis added).

³⁵ Deal Report, ¶36.

a) June 16-19, 2017

25. Numerous analysts who followed CenturyLink issued reports in the aftermath of the June 16-19, 2017 corrective disclosures. To demonstrate that there must have been information the analysts considered to transmit to their investor clients, I first note that, overall, the analysts cited by Mr. Deal issued reports infrequently. Specifically, on average, these analysts issued reports on only approximately 4.0% of the dates over the 1,097-day-long Class Period.³⁶ For example, over the whole Class Period, Gabelli and Company issued 15 reports, Barclays issued 19 reports, and Cowen & Company issued 16 reports. These figures represent 1.4%, 1.7% and 1.5% of the dates (or on average, every 78, 58, and 73 days, respectively) during the Class Period, respectively. The infrequency of analyst report issuance and the average number of days between reports suggest that the corrective disclosures, which prompted numerous analyst reports to be issued, contained important information.

26. The following table is a list of analyst reports available from the S&P CapitalIQ and Thomson Eikon databases from June 16, 2017 through June 30, 2017. This may not include all analyst reports that were issued over the period.³⁷

³⁶ These analysts mentioned in the Deal Report include: Gabelli and Company (§116); Morningstar (§117); Morgan Stanley (§118); Bank of America Merrill Lynch (“BAML”) (§120); Barclays (§121); and Cowen & Company (§122).

³⁷ Often, in discovery, a more complete record of analyst reports is available if such reports were collected by a company’s investor relations department.

Analyst	Date/Time*	Title
Jefferson Research & Mgmt	Jun 16, 2017 01:55 PM	Jefferson Financial - CENTURYLINK INC
CFRA Equity Research	Jun 16, 2017 02:56 PM	CFRA REDUCES RECOMMENDATION ON SHARES OF CENTURYLINK TO HOLD FROM BUY
Morningstar Inc.	Jun 16, 2017 05:36 PM	CenturyLink Accused in Lawsuit of Signing Up Customers to Services They Didn't Request
Morningstar Inc.	Jun 16, 2017 05:41 PM	Morningstar CenturyLink Accused in Lawsuit of Signing Up Customers to Services They Didn't Request
Gabelli & Company, Inc.	Jun 19, 2017 05:11 AM	CTL: Updating Estimates - Buy
Morgan Stanley	Jun 19, 2017 10:13 AM	CenturyLink, Inc.: CenturyLink Lawsuit Raises Questions but Precedents Suggest Limited Impact
UBS Investment Bank	Jun 21, 2017 09:59 PM	CenturyLink, Inc. "Trends to weaken in 2Q but deal close is near" (Buy) Levi
BofA Merrill Lynch	Jun 22, 2017 03:31 PM	CenturyLink: New post-deal management structure plays to strengths
Jefferson Research & Mgmt	Jun 23, 2017 02:00 PM	Jefferson Financial - CENTURYLINK INC
Barclays	Jun 26, 2017 12:18 AM	U.S. Telecom and Comm. Infrastructure: The Roz Report: A Risk Framework for Recent CenturyLink Allegations
Barclays	Jun 29, 2017 03:19 AM	CenturyLink / Level 3: Survey Points to Opportunities, But a Reset in Expectations Seems in Order

Sources: S&P Capital IQ and Thomson Eikon. *Date/Time from S&P Capital IQ.

27. Of note, before the June 16, 2017 trading session was concluded, CFRA *downgraded* CenturyLink from a “Buy” rating to a “Hold” rating, stating the analyst “see[s] increased risks after an unconfirmed Bloomberg report cites a lawsuit filed by a former employee, accusing CTL of running a Wells Fargo type scheme.” This change in investment recommendation (from Buy to Hold) reflects that the analyst viewed the news in the corrective disclosure of major importance. I note that, while Mr. Deal had access to and cited and relied upon the June 16, 2017 CFRA report elsewhere in his report,³⁸ and it was cited in the Complaint,³⁹ he did not mention this the CFRA downgrade in the section of his report discussing “analyst reactions” to the June 16, 2017 corrective disclosures.⁴⁰

28. Similarly, while Mr. Deal describes the Morningstar report issued on June 16, 2017 as “downplay[ing] the significance” of the corrective disclosure, a fair reading of that report suggests the opposite. Specifically, a portion of the report omitted from Mr. Deal’s report stated:

³⁸ See, e.g., Deal Report, Exhibit 30B.

³⁹ Complaint, ¶157.

⁴⁰ Deal Report, ¶¶112-22.

On June 16, a lawsuit was filed by a former employee of CenturyLink claiming she was fired for whistle-blowing regarding aggressive sales tactics similar to what Wells Fargo Bank did. She claims salespeople were pushed to make sales goals and would sometimes code accounts for additional services that the customer did not request. It is too early to tell if these allegations are true and if so, how extensive they are. Thus, for now we are maintaining our \$32 fair value estimate....We believe the shares of this narrow moat- and high uncertainty- rated name are undervalued. However, if the allegations turn out to be true and widespread, like at Wells Fargo, we would likely reduce our fair value estimate.⁴¹

29. Notably, consistent with the analyst's statement that "if the allegations turn out to be true and widespread, like at Wells Fargo, we would likely reduce our fair value estimate," Morningstar in fact reduced its fair value estimate for CenturyLink from \$32 to \$30 on July 13, 2017, the day after the third corrective disclosure revealing the filing of the Minnesota Attorney General lawsuit, and specifically in response to that disclosure.⁴²

30. Mr. Deal appears to have ignored analysts' reactions that undermined his conclusions. For example, on June 21, 2017, UBS issued a report that noted that the "reports on the recent lawsuit have also weighed on shares"⁴³ and on June 26, 2017, Moody's issued a release stating that "CenturyLink's class-action lawsuit is . . . potentially credit negative."⁴⁴

⁴¹ "CenturyLink Accused in Lawsuit of Signing Up Customers to Services They Didn't Request," *Morningstar*, June 16, 2017, at 1.

⁴² "CenturyLink Sued by Minnesota Attorney General on Overbilling Customers; Cutting FVE to \$30," *Morningstar*, July 13, 2017, p. 1.

⁴³ "Trends to weaken in 2Q but deal close is near," *UBS*, June 21, 2017, p. 1.

⁴⁴ "Moody's says CenturyLink's class-action lawsuit is probably limited, but potentially credit negative," Moody's Investors Service Press Release, June 26, 2017.

31. Further, while Mr. Deal discusses the reports issued by Morgan Stanley,⁴⁵ Bank of America-Merrill Lynch,⁴⁶ Barclays⁴⁷ and Cowen & Co.⁴⁸ addressing the June 16 and June 19 corrective disclosures, the actual content of those reports demonstrates the major importance nature of the news made public in connection with the corrective disclosures, as further discussed below.

32. In total, including Moody's, at least six analyst reports were issued in June 2017 following the first alleged corrective disclosure (not including the qualitative analyst Jefferson Research & Management). I note that CenturyLink did not announce earnings results or file quarterly SEC forms during that period. The publication of numerous analyst reports shortly following the June corrective disclosures strongly calls into question the reliability of Mr. Deal's conclusion that there was no "additional substantive information" information disclosed on June 16, 2017 and June 19, 2017.

33. As my Opening Report showed, there was substantial analyst coverage of CenturyLink. However, most of the analyst reports were issued at regular frequency only when the Company disclosed material information (*e.g.*, earnings releases, capital structure changes, corporate governance issues, etc.). The fact that numerous analysts issued reports in the wake of the corrective disclosures is, in my experience and opinion as a financial economist, a strong signal that they considered the additional information disclosed in the corrective disclosures to be of major importance. This conclusion is also based on decades of academic, peer-reviewed research on the importance of analysts to the disclosure,

⁴⁵ CenturyLink Lawsuit Raises Questions but Precedents Suggest Limited Impact," *Morgan Stanley*, June 19, 2017, p. 1.

⁴⁶ "New post-deal management structure plays to strengths," *Bank of America Merrill Lynch*, June 22, 2017, p. 1 (emphasis added).

⁴⁷ "The Roz Report: A Risk Framework for Recent CenturyLink Allegations," *Barclays*, June 26, 2017, p. 1 (emphasis added).

⁴⁸ "Introducing Combined LVL Model; More Stable Ground but Questions Remain," *Cowen and Company*, July 5, 2017, pp. 4-5.

dissemination and processing of firm-specific information.⁴⁹ The analyst reaction here undermines Mr. Deal's conclusion that the allegations in the lawsuits reported on June 16, 2017 and June 19, 2017 could not have revealed any meaningful information to the market.

34. [REDACTED]

[REDACTED]

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⁴⁹ See, for example: Claire A. Hill and Brett H. McDonnell, eds, Research Handbook on the Economics of Corporate Law, Chapter 17: *The Role and Regulation of the Research Analyst*, 315-336 (Edward Elgar Publishing Limited, 2012); T. Clifton Green, *The Value of Client Access to Analyst Recommendations*, 41 Jnl. of Fin. and Quant. Analysis, 1-24 (2006); Michael J. Brennan, Narasimhan Jegadeesh, and Bhaskaran Swaminathan, *Investment Analysis and the Adjustment of Stock Prices to Common Information*, 6 Rev. of Fin. Stds., 799-824 (Winter 1993).

⁵⁰ JFWBK_0014641, at -641.

⁵¹ JFWBK_0014641, at -641.

⁵² CTLMNSEC00909169.

⁵³ CTLMNSEC00929264, at -264.

35. Moreover, as CenturyLink would announce in its August 7, 2017 10-Q, following the corrective disclosures, by “late June 2017, the Board of Directors formed a special committee of outside directors to investigate alleged improper sales and billing practices and related matters.”⁵⁴

36. These facts from the still-developing record suggest that the June 2017 disclosures had price impact.

b) July 12, 2017

37. Numerous analysts who followed CenturyLink also issued reports in the aftermath of the July 12, 2017 corrective disclosure. I first note that analysts rarely issue multiple reports outside of their typical cycle and within such a short period unless the report is associated with an event analysts conclude is important to communicate to investors. Here, several analysts issued multiple reports between June 16, 2017 and the end of July, 2017, evincing a much shorter period between issuance of reports than is typical. Again, this in itself suggests the importance of the information in the disclosure about the Minnesota Attorney General lawsuit.

38. Indeed, analyst reports issued in the wake of the June 2017 corrective disclosures explicitly stated that the market would look to events like the filing of subsequent lawsuits to determine the scope and severity of problems at CenturyLink. For example, in the Morgan Stanley report discussed by Mr. Deal that was issued on June 19, 2017 noted:

One question which may be clarified in the near term is the scope of the alleged activity. We will be interested in the degree to which this appears to be an isolated incident, or something with broader geographical and financial scope. **We will therefore be watching for other potential lawsuits or press**

⁵⁴ CenturyLink Form 10-Q, filed with the SEC on August 7, 2017, at 24.

stories in other locations. If non emerge in the next few weeks, this this would suggest a more limited exposure.

39. In fact, at least two analyst reports Mr. Deal discusses evince this exact phenomenon. On July 24, 2017, Cowen & Co. issued a report describing that “consumer fraud allegations” were driving CenturyLink securities price declines, and explaining that the recent state attorney general action further “legitimized” them:

Shares remain under pressure [from] the Consumer Fraud allegation[s], **which have clearly become more legitimized with state lawsuits**, making it incrementally more difficult to find a bottom in a worst case scenario view.⁵⁵

40. Similarly, after its June 16, 2017 report stated that additional evidence demonstrating that the whistleblower allegations were “true and widespread” would cause Morningstar to lower its fair value estimate, Morningstar took such action on July 12, 2017, immediately following the disclosure of the Minnesota Attorney General action - and, as Mr. Deal concedes, did so specifically “as a result of the lawsuit”:

Morningstar issued a report on the day the news of the Minnesota AG’s suit was released, explaining that **they had reduced their fair value estimate of CenturyLink stock as a result of the lawsuit** (from \$32 to \$30 per share in their fair value assessment).⁵⁶

41. And in any event, other analyst reports Mr. Deal cites plainly identify the announcement of various lawsuits against the Company as at least partially causing reductions in CenturyLink’s stock price, a point Mr. Deal does not meaningfully contest. For example, on July 17, 2017, analysts at BAML explained: “CTL shares have had a negative reaction **due to various lawsuits stemming from a wrongful termination complaint filed by a former employee**. The substance of the complaints, according to

⁵⁵ Deal Report, ¶128 (“C2Q17 Telco Services Preview,” *Cowen and Company*, July 24, 2017, pp. 1, 5) (emphasis omitted and added).

⁵⁶ Deal Report, ¶125. “CenturyLink Sued by Minnesota Attorney General on Overbilling Customers; Cutting FVE to \$30,” *Morningstar*, July 12, 2017, p. 2.

reports, relates to excess services sales reps were pressured to sell.”⁵⁷ Similarly, on July 19, 2017, analysts at Morgan Stanley acknowledged that the news of the Minnesota AG lawsuit had induced CenturyLink’s stock price decline, stating: “[T]he primary driver has been the announcement of lawsuits alleging CenturyLink has been inappropriately charging customers.”⁵⁸

42. [REDACTED]

[REDACTED]

43. And on August 3, 2017, Cowen & Co connected CenturyLink’s bearish stock performance to the lawsuit, stating: “CTL shares have already seen a meaningful stock pullback, factoring in the lawsuit.”⁶⁰ As is clear from these reports, numerous financial professionals considered the disclosures concerning the lawsuits reflected new, meaningful information relevant to their assessment of CenturyLink and to have caused all or a portion of the declines in CenturyLink’s stock following the July 12, 2017 disclosure.

44. Other evidence shows the importance of these disclosures as well. [REDACTED]

[REDACTED]

⁵⁷ Deal Report, ¶126 (“2Q preview & model book - Weathering tough 2Q and looking for better 2H,” *Bank of America Merrill Lynch*, July 17, 2017, p. 27) (emphasis omitted and added).

⁵⁸ Deal Report, ¶127 (“2Q17 Preview: Counting Down to Level 3,” *Morgan Stanley*, July 19, 2017, p. 1) (emphasis omitted and added).

⁵⁹ CTLMNSEC00921090, at -090 (emphasis added).

⁶⁰ “Remain on Sidelines as Both CTL and LVLT Look for 2H17 Improvement,” *Cowen and Company*, August 3, 2017, p. 1.

45. In summary, Mr. Deal's conclusion that "it is unclear what, if any, additional substantive information was disclosed in any of the three, and especially the latter two allegedly curative disclosures" appears to lack a reasonable economic basis, and at minimum plainly represents a fact-intensive merits issue that would seem to be impossible to determine at this stage given that discovery is ongoing (and, as I understand from Plaintiffs' Counsel, far from complete). In any event, it is undeniable that Mr. Deal and I agree that CenturyLink's securities price declines on June 16, June 19, 2017 and July 12, 2017 were caused in whole or part by the alleged corrective disclosures.

2. *Mr. Deal's Opinion Is Based Upon His Flawed Assessment that the Allegations Are False, or that They Had Been Previously Disclosed*

46. Mr. Deal also purports to support his opinion that “the alleged curative disclosures are not disclosures of findings or facts”⁶² on grounds that the allegations in the Complaint are not “true,” “accurate,” “reasonable,” or “correct.”⁶³ As an expert economist, I find Mr. Deal’s statement puzzling. First, is his belief that corrective disclosure must be from the issuer. However, many corrective disclosures in litigation come from third parties who reveal the truth about a company’s misdeeds, and it is not obvious why a legal complaint – which pleads factual matter – cannot reveal unanticipated, material facts to the market.

47. Nevertheless, Mr. Deal also criticizes my Opening Report for failing to examine and evaluate whether the allegations in the Complaint are true. Mr. Deal seems

61 CTLMNSEC00928096.

⁶² Deal Report, ¶36 (emphasis added).

⁶³ For example, Mr. Deal repeats that I merely assumed the allegation were true (Deal Report, ¶¶14, 16, 18, 53, 164); states there are no methods shown to accurately measure inflation (Deal Report, ¶¶10, 12, 32, 70, 97, 105) or I assumed the Complaint to be accurate (Deal Report, ¶¶94, 105); and states that I did not evaluate the reasonableness of the assumption that the allegations are true (Deal Report, ¶¶53, 131, 185, 190).

to suggest that expert economists at the class certification stage – without the benefit of full discovery – should place themselves in the role of trier of fact and determine whether the allegations in a complaint are “true,” “accurate,” “reasonable,” or “correct.”⁶⁴ Mr. Deal also appears to purport to do so in his Report, and reaches the conclusion that the allegations in the case are not true. Based on this questionable conclusion, he appears to opine that the misrepresentations in this case lack price impact.⁶⁵

48. However, it is my understanding from Plaintiffs’ Counsel, as well as my extensive experience in supporting both Defendants and Plaintiffs in securities class action litigation, that even for an eventual expert report, an expert economist opining at class certification is supposed to assume that liability will be proven at trial. The analysis Mr. Deal purports to offer, and to criticize my Opening Report for failing to contain, is, in my view, clearly an opinion related to the merits of this case, specifically liability, and goes beyond what I understand to be the role of the expert economist at even the damages stage of a case – let alone at class certification.

49. Mr. Deal also concludes, based on what economists and lawyers often refer to as the “truth on the market” hypothesis (“TOTM”), that “news about suspicions, allegations, and investigations of cramming in the telecom industry had been publicly

⁶⁴ For example, Deal Report, ¶53 (“In this section, I provide economic analysis to show that an overarching assumption of truth of the allegations in the Complaint is neither warranted nor sufficient to support a conclusion that a common method of estimating price inflation can be developed in this Action.”); ¶55 (“I find that the underlying premise that the alleged curative disclosures were effectively revelations of a previously unknown truth is unsupported.”); ¶80 (“Overall, the analyses above highlight the complexity of these 52 frequently information-rich dates and the overly simplistic—and incorrect—premise that merely assuming everything in the Complaint will be shown to be true will somehow result in a damages measurement approach that will be common to all class members.”); ¶¶97, 105, 164, 189, 190.

Mr. Deal takes on his role of trier of fact even though he admits that in his view the allegations are unclear to him. Deal Tr. 35: 9-14 (“Here we’ve got a very, very complex case ... a little unclear what the exact allegations are.”).

⁶⁵ See generally Deal Report, ¶¶81-104.

disclosed⁶⁶ – and therefore suggests that that that these corrective disclosures at issue in this case could not have impacted the prices of the CenturyLink Securities.⁶⁷

50. However, as I understand from Plaintiffs’ Counsel, courts have stated that the TOTM argument is extremely fact intensive. As a matter of economics, I agree that determining whether information was previously disclosed (*i.e.*, who outside the Company knew what, when) often requires close scrutiny of relevant facts and internal documents to understand what might have been concealed). I note that Mr. Deal testified that he really had not evaluated all the relevant information in the allegations and the various disclosures; indeed, he characterized his analysis as “preliminary” and “illustrative,” and it is apparent that he selectively chose past events related to cramming, as well as a subset of post-announcement analyst quotes and news media cites, in an attempt to establish that the full truth about cramming at CenturyLink was completely disclosed prior to the corrective disclosures in this case.⁶⁸ Moreover, Mr. Deal also testified that he did not refer to or rely upon even a single non-public CenturyLink document.⁶⁹

51. In any event, I do not find Mr. Deal’s TOTM opinion to be well-supported. To start, Mr. Deal admitted that the *specific information* concerning CenturyLink sales practices that was revealed in the three corrective disclosures could not really have been previously known by investors.⁷⁰ Indeed, he agreed that the information in the corrective

⁶⁶ Deal Report, ¶36 (emphasis added).

⁶⁷ Mr. Deal relies on (and agrees with) my opinion that the CenturyLink Securities traded in efficient markets for this conclusion.

⁶⁸ Deal Tr. 31:9-13; 32:15-23; 74:20-76:10 (objections omitted); Deal Report, ¶¶54-58.

⁶⁹ Deal Tr. 116:13-117:1 (“Q I want to clarify it because I think it’s important. Have you looked at any internal CenturyLink documents dated during the class period? THE WITNESS: Just give me a moment here....The answer is no.”)

⁷⁰ Deal Tr. 87:5-15 (“Q Right. So, again -- but you’re not saying that Ms. Heiser’s lawsuit, the facts contained in that lawsuit, the other information disclosed on June 16th was publicly known or somehow existed in the market prior to that time? A Again, I agree with that certainly as to the specifics. I’m not aware that Ms. Heiser’s lawsuit or even any of the subsequent lawsuits that are referenced in the Complaint, that those -- that specific information about those specific lawsuits was known.”); Deal Tr. 87:17-88:2 (objection omitted) (“And then certainly the same is true of the July 12th corrective disclosure, you’re not suggesting that investors were

disclosures related only to sales practices (*i.e.*, he was unable to cite to any confounding information that was simultaneously released)⁷¹ and did not perfectly reflect prior disclosures from CenturyLink related to third-party cramming,⁷² and that the observed statistically significant stock price reactions on June 16, 2017 and July 12, 2017 were caused by the information of major importance in the corrective disclosures.⁷³

aware of the investigation by the Minnesota attorney general or the, you know, facts set forth in the Complaint that they filed prior to July 12th of 2017? I would certainly agree to the last part of that because, again, I have no reason to think that investors knew about the actual filing of the lawsuit.”).

⁷¹ Deal Tr. 164:19-165:19 (“Q Other than FUD you haven’t identified any other confounding information on any of the three disclosure dates that you believe caused the decline? A If I understand your question, you’re saying that the three disclosure dates that you’re alleging that I’ve studied here, the question is what other confounding information is there. I haven’t studied that question in detail. I’m not -- I don’t -- they’re not earning disclosure dates so they don’t have the same kinds of issues as, you know, many of the dates on the inflationary side. There may be other things on those days as well, but I haven’t studied that in detail. I’m not aware of a significant number. I think -- I do see -- especially on the first and the third day, when I look at the intraday information, you know, I do see a connection -- let’s take the first day between when this news comes out and the intraday, prices do seem to decline. So I don’t dispute that there’s a likely connection between those two, and it’s not that there was also, oh, our plant blew up that day. I’m not aware of any of that type of confounding information.”).

⁷² Deal Tr. 85:24-88:2.

⁷³ Deal Tr. 169:12-17 (“Q Okay. And I’m correct that we discussed this before, of the three alleged corrective disclosures, both you and Dr. Hartzmark, with your respective models, find June 16th and July 12th to be statistically significant; is that correct? A For the equity, that’s correct.”); Deal Tr. 165:7-19 (“There may be other things on those days as well, but I haven’t studied that in detail. I’m not aware of a significant number. I think -- I do see -- especially on the first and the third day, when I look at the intraday information, you know, I do see a connection -- let’s take the first day between when this news comes out and the intraday, prices do seem to decline. So I don’t dispute that there’s a likely connection between those two, and it’s not that there was also, oh, our plant blew up that day. I’m not aware of any of that type of confounding information.”); Deal Tr. 180:1-11 (“Yeah. I think that’s right. I know that as I was reviewing the data -- and I’m looking at Exhibit 30A [for June 16, 2017], I think what’s interesting to me -- it’s got an interesting phenomena here which is, you know, you do see a fairly significant reaction. I’m not using ‘significant’ in the statistical sense here, although overall it does move in a statistically significant way from -- from over the course of the day, but it sort of looks like it kind of pauses a little and then falls off the cliff, the mini cliff here.”).

52. In addition, his opinion ignores numerous pieces of evidence, such as the analyst and internal commentary discussed above, which at minimum suggests that the market viewed the disclosures as revealing new information.

53. Further, Mr. Deal ignores that the June 16, 2017 *Bloomberg* story that is the first alleged partial corrective disclosure directly contradicts his theory that third-party cramming investigations and fines put investors on notice of the type of allegations at issue here. Specifically, the *Bloomberg* article explained:

Phone service giants such as AT&T Inc., Verizon Communications Inc., and Sprint have all settled cases in which third-party companies had been adding services to customers' phone bills without consent. These “cramming” issues typically involved \$9.99 monthly charges for horoscopes and trivia games. **That is different from a telephone company employee who may be looking to meet sales goals by creating false accounts or adding services to existing accounts without the subscriber's knowledge or consent.**⁷⁴

54. In sum, Mr. Deal’s arguments about the allegations in the Complaint being false and the truth having been previously revealed are both fact intensive merits arguments that I understand to be inappropriate at this stage of the case. Mr. Deal not only fails to acknowledge that determining such an issue is difficult at class certification, but he in fact *decides these issues in favor of Defendants*, based on a highly limited (at best) analysis that ignores a large amount of contemporaneous, countervailing evidence. In contrast to his unreliable and unsupported conclusion, the incomplete evidence available at this stage strongly suggests that the market was not aware of widespread cramming allegations against CenturyLink prior to the corrective disclosures.

⁷⁴ “CenturyLink Is Accused of Running a Wells Fargo-Like Scheme,” Bloomberg News, June 16, 2017, 1:50 p.m. (emphasis added).

3. *Mr. Deal's Opinion Is Based Upon His Speculative and Novel Economic Theory that Fear, Uncertainty and Doubt Unrelated to Cramming Caused the Price Declines*

55. In an apparent attempt to bolster his TOTM hypothesis, Mr. Deal created a speculative and novel financial economic theory based on “his experience” in the technology *antitrust litigation* world.⁷⁵ His theory argues that the price impact from the curative information in the alleged corrective disclosures was *amplified* by what he calls “FUD” or, “‘fear, uncertainty, and doubt’ because of a large-scale fraud committed by Wells Fargo.”⁷⁶ In other words, Mr. Deal hypothesizes that the revelation of CenturyLink’s firm-specific news of cramming practices caused some immaterial price decline, but the FUD induced in the market caused most of the price impact from the alleged corrective disclosures. Mr. Deal appears to rely on FUD as an alternative explanation for the statistically significant stock price declines in reaction to the corrective disclosures, despite being unable to cite to any academic source or legal precedent related to measuring securities’ reactions to FUD, and indeed being unable to cite any use of the FUD concept outside of the antitrust and the telecommunications sales and marketing world.⁷⁷ Besides appearing to be entirely speculative, there are numerous flaws in Mr. Deal’s analysis.

⁷⁵ Deal Tr. 156:5-25.

⁷⁶ Deal Report, ¶15. I note that Wikipedia describes FUD as:

“Fear, uncertainty, and doubt (often shortened to FUD) is a disinformation strategy used in sales, marketing, public relations, politics, cults, and propaganda. FUD is generally a strategy to influence perception by disseminating negative and dubious or false information and a manifestation of the appeal to fear. While the phrase dates to at least the early 20th century, the present common usage of disinformation related to software, hardware and technology industries generally appeared in the 1970s to describe disinformation in the computer hardware industry, and has since been used more broadly.” https://en.wikipedia.org/wiki/Fear,_uncertainty,_and_doubt, accessed May 1, 2020.

⁷⁷ Deal Tr. 156:12-21 (“Certainly I -- again, I can’t cite as I sit here right now, but I know that there -- well, to the best of my recollection there was and there is, therefore, existing research in -- as I recall in the context of Microsoft and some of these kind of antitrust issues that FUD is something that is explored in the research. I can’t cite specific papers and things right now but I have a recollection that it’s a topic that’s explored.”).

56. First, Mr. Deal fails to set forth a coherent theory of how FUD works, how a scientist would replicate such an assertion (*i.e.*, price impact of the lack thereof), and how it is distinct or independent from risks revealed by allegations of cramming. Critically, he does not dispute that, despite FUD, CenturyLink Securities prices fell in conjunction with the disclosure of lawsuits against CenturyLink. In addition, Mr. Deal fails to explain how, if all investors knew the truth that this type of activity was being concealed - because of previously disclosed information about CenturyLink's or the industry's activities, as he claims was known by the market participants in his TOTM argument - why would information in the corrective disclosures cause there to be FUD? Mr. Deal also fails to explain how, if FUD was the cause of the price declines in the two June 2017 alleged corrective disclosures, it could reemerge and surprise investors again on July 12, 2017. In my view, these and other basic conceptual questions prevent FUD from being a meaningful alternative explanation for the decline.

57. Second, and notably, Mr. Deal in any event testified he has not opined that FUD caused 100% of the price declines on the corrective disclosure dates. In addition, he testified that he performed no empirical analysis to demonstrate that FUD caused any portion of the statistically significant securities price decline on the alleged corrective disclosure dates, let alone 100% of the decline.⁷⁸

58. Needless to say, the questionable opinion Mr. Deal offers concerning FUD does not suggest, let alone establish, that there is an absence of price impact. In my view, it is at most an unsupported and vague partial explanation of the stock price declines.

4. Mr. Deal's Purported Analysis of Intraday Price Movements Does Not Show an Absence of Price Impact

59. Mr. Deal examines intraday data and concludes, from a subjective eyeballing of minute-by-minute data (what at best is a cursory review that is devoid of any scientific rigor), that:

⁷⁸ Deal Tr. 215:3-6 ("Before you leave the corrective disclosures, it's not just the fact that there's FUD out there. I think that's a contributing factor to why we see the drop we see.").

I find that the price reactions to information often move in directions and magnitudes different than those that would be predicted based on a simple assumption that the Complaint will be shown to be true.⁷⁹

60. Because this conclusion is not supported by any generally-accepted scientific tests, it is flawed and thus unreliable. Further, as discussed below, Mr. Deal's intraday analyses did not even include consideration of the materials that he purports to examine—including, for example, a *Bloomberg* article in the Complaint alleged to be one of the corrective disclosures.

a) June 16, 2017

61. For June 16, 2017, Mr. Deal states:

I find that on June 16, despite the numerous news stories that were published after the 1:50 pm *Bloomberg* story (most of which reiterated the facts noted in the original *Bloomberg* story), CenturyLink's price recovered a substantial portion of the lost ground after an initial sell off.⁸⁰

According to Mr. Deal, this observation supports his conclusion that “it is far from certain that these are, in fact, curative disclosure dates that contain any actual news of one or more categories of fraud.”⁸¹

62. This purported “finding” fails in two critical aspects that make it unreliable. First, Mr. Deal does not even examine whether the price movements (and in particular the “substantial portion of the lost ground”) he observes are statistically significant or simply normal random price movements academics and industry participants observe when examining intraday price data.⁸² Moreover, on this date there were apparently revelations

⁷⁹ Deal Report, ¶153.

⁸⁰ Deal Report, ¶154 (emphasis in original).

⁸¹ Deal Report, ¶36.

⁸² Mr. Deal admits that he “looks” at the points and it is “intended to be illustrative.” Deal Tr. 205:17-206:6 and 211:21-212:3.

of major importance and relatively high volume, all of which likely would cause an economist to expect substantial price volatility.

63. Second, failing to apply scientific principles, Mr. Deal does not even attempt to evaluate all the “news” or detect why the prices moved upward and downward. For example, he assumes the price responses would follow within a single minute of each of the selectively culled news items he identifies, but does not evaluate whether this is an appropriate window based on the type of information in the disclosures; and whether the disclosure was unanticipated, material news.

64. Indeed, Mr. Deal admitted in testimony that this was a “preliminary analysis.”⁸³ It fails to be a reliable, scientific analysis.

b) June 19, 2017

65. I have the same criticisms of Mr. Deal’s unscientific and unreliable analysis concerning June 19, 2017 disclosure. Again, he offers no rigorous scientific tests, nor fully develops assumptions on the event windows, nor does he offer an in-depth examination of the information disclosed in the news.⁸⁴ Even so, without any reliable support, Mr. Deal opines that:

For all the reasons stated above, it is my opinion that although the closing price on June 19, 2017 was indeed lower than the opening price, the by-minute movement of CenturyLink’s stock price is not consistent with the assumption that the drop can be considered a timely response to the arrival of specific allegedly corrective news.⁸⁵

⁸³ Deal Tr. 32:13-18.

⁸⁴ Indeed, Mr. Deal states his incomplete analysis of the intraday data supports his opinion that the allegations will not be proven to be “true.” He then goes on to admit that the analysis and conclusions are premature and based on his an insufficient, incomplete and unreliable analysis; stating: “I also conduct additional economic analysis that show that Dr. Hartzmark’s blanket assumption that Plaintiffs’ allegations will be shown to be true and can be used as the basis for a common approach to calculating damages is not supported, even without a full analysis of loss causation.” Deal Report, ¶164 (emphasis added).

⁸⁵ Deal Report, ¶161.

This reasoning fails to persuade for the same reasons his purported analysis concerning June 16, 2017 failed.

66. For June 19, Mr. Deal also attempts to offer an alternative causal explanation:

... the **overall price drop is not unique to CenturyLink**. I also plotted the by-minute price movement of Windstream, one of CenturyLink's main comparable competitors. Windstream, which had no allegedly curative disclosures on June 19, 2017, also saw a similar price movement on the same day. Hence, **it is uncertain if CenturyLink's overall price drop is directly reduced by the curative disclosure or is simply reflective of a sub-industry effect and/or investor sentiment** on that particular day.⁸⁶

67. Mr. Deal suggests throughout his report that Windstream is considered by analysts to be a peer of CenturyLink. However, Windstream is a substantially smaller company (market capitalization of \$0.706 billion, as compared \$12.997 billion for CenturyLink).⁸⁷ Because Windstream is a much smaller competitor, co-movements in prices between CenturyLink and Windstream could easily be explained as Windstream responding to news disclosed about the large and widely followed CenturyLink. Indeed, throughout his report, Mr. Deal suggests that Windstream's price co-moves with CenturyLink. Therefore, it is entirely possible that what Mr. Deal eyeballs on June 19, 2017 is really about a possible billing fraud at CenturyLink that would raise concerns about similar issues at Windstream.

68. To evaluate these co-movements in prices using generally-accepted scientific methods and determine whether it is more likely they are based on CenturyLink information than Windstream-specific information or industry considerations, Indeed, I searched Factiva and Bloomberg for news related to Windstream over the period June 16,

⁸⁶ Deal Report, ¶160.

⁸⁷ As of the end of December 2016 per Exhibits 29A and 29B to the Deal Report.

2017 through June 19, 2017.⁸⁸ For Windstream, there were no economically meaningful stories except for a **positive** story concerning the Colorado Public Utilities Commission's approval of Windstream's acquisition of Broadview Network. Therefore, the co-movements that Mr. Deal claims to observe are not support for his conclusion that the June 19, 2017 movements of CenturyLink were industry-related, as opposed to CenturyLink firm-specific movements due to the information in the alleged corrective disclosures being digested and processed, which caused Windstream to follow suit. At minimum, his unscientific "eyeball" test does not demonstrate that there was no "additional substantive information"⁸⁹ about CenturyLink disclosed on June 19, 2017, let alone that the allegations are untrue.

5. *Technical Differences in Event Window Between My and Mr. Deal's Event Studies Do Not Show an Absence of Price Impact*

69. Mr. Deal's equity event study differs in a handful of relatively minor⁹⁰ technical ways from mine. For the most part, these differences are immaterial: under either specification of the event study, the one-day price movements on June 16 and July 12 are highly significant at the 95% or higher confidence level. It is my opinion that these results are sufficient to show price impact of the alleged misrepresentations for the purposes of class certification, and in any event clearly demonstrate there is no evidence of a lack of price impact.

70. The most significant difference in our respective analyses concerns whether the stock price movement on June 19, 2017 is statistically significant. I use a two-day window for that disclosure, while Mr. Deal opines that a two-day disclosure is flatly

⁸⁸ For Factiva, I searched all sources for June 16-June 19, 2017 for company "Windstream Holdings, Inc.". For Bloomberg, I searched all sources for June 16-June 19, 2017 for company "Windstream Holdings Inc" with "Low" relevance.

⁸⁹ Deal Report, ¶36.

⁹⁰ These minor differences include (1) our choice of industry index, (2) our method of calculating standard errors, and (3) whether we include "dummy" variables on earnings dates or not.

inappropriate. Based on his one-day result, and what Mr. Deal calls a “preliminary analysis of the disclosures on that date,” he concludes:

there is insufficient evidence to show that the 1.4% decrease is directly caused by any allegedly curative disclosures made that day.⁹¹

CenturyLink’s stock price is not consistent with the assumption that the drop can be considered a timely response to the arrival of specific allegedly corrective news.⁹²

Since the price movement on June 19 cannot plausibly be tied to the alleged curative disclosure on June 16, it does not make sense to consider a two-day cumulative abnormal return as Dr. Hartzmark has done.⁹³

71. Having reviewed Mr. Deal’s Report and deposition testimony, my opinion is that Mr. Deal’s conclusions and analyses are flawed, and I continue to suggest that June 19, 2017 provides meaningful affirmative evidence of price impact.

a) The Stock Price Declines on June 19, 2017 Is at Minimum Economically Significant

72. The Complaint alleges that, “On Monday, June 19, 2017, Bloomberg reported on a consumer class action lawsuit on behalf of ‘potentially millions’ of CenturyLink customers alleging billing misconduct that had been filed the day before, which on that day caused CenturyLink’s stock to fall by 1.4%”⁹⁴ and its 7.6% Note to fall by 2.4%.⁹⁵ In my Opening Report, I found that the common stock price decline was statistically significant at the 94% level—a confidence level Mr. Deal terms as “weak evidence of statistical significance.”⁹⁶— and the 7.6% Note price again declined by a highly significant amount.

⁹¹ Deal Report, ¶159.

⁹² Deal Report, ¶161.

⁹³ Deal Report, ¶163.

⁹⁴ Complaint ¶¶154-156. MTD Order, p. 11.

⁹⁵ Hartzmark Report, Appendix L.

⁹⁶ Deal Report, n178.

I also note that on June 20, 2017 the price of the 7.6% Note declined by an additional statistically significant amount of 2.7%.⁹⁷

73. The price reactions of these two securities to the news and certain other information, when considered together, provide evidence that June 19, 2017 is, at minimum, an *economically significant* date, and clearly support the view that economically important information was introduced into the market. Mr. Deal did not consider the responses of these two securities in combination. Considering the securities together would also suggest that further analysis should be done, which is presented below.

b) The Stock Price Declines on June 19, 2017 Should Be Considered a Timely Response to the Arrival of Specific Allegedly Corrective News

74. In reaching his conclusions concerning CenturyLink's price movement on June 19, Mr. Deal failed to evaluate the potentially offsetting impact of certain key pieces of news that were disclosed during and after the June 16, 2017 trading day, some of which could possibly have cushioned the price decline. In particular, there were at least three publicly disclosed announcements of important information that he failed to reference that potentially had a cushioning effect on the price declines that observed for the stock and 7.6% Note.

75. [REDACTED]

[REDACTED]⁹⁸

76. CenturyLink released a positive disclosure after the market closed on June 16, 2017, stating:

CenturyLink said it is taking the allegations seriously and is "diligently investigating" the matter.... "CenturyLink is here to

⁹⁷ Hartzmark Report, Appendix L.

⁹⁸ JFWBK_0014642.

serve our customers. As such, CenturyLink holds itself and its employees to the highest ethical standards and does not condone any type of unethical behavior,” said Annmarie Sartor, external communication manager for CenturyLink. “The allegations made by our former employee are completely inconsistent with our company policies, culture and Unifying Principles, which include honesty and integrity.”⁹⁹

77. This statement was repeated in news and analyst reports, including in an updated version of the original Bloomberg article published earlier that day, which stated:

CenturyLink “holds itself and its employees to the highest ethical standards” and has “an Integrity Line in place, 24 hours a day, seven days a week,” Mark Molzen, a spokesman, said in a statement. “This employee did not make a report to the Integrity Line and our leadership team was not aware of this matter until the lawsuit was filed. We take these allegations seriously and are diligently investigating this matter.”¹⁰⁰

78. A positive statement like this one could certainly cushion any stock price decline on Monday June 19, 2017 from the announcement of the Heiser suit on Friday, June 16, and the consumer fraud cases announced on Monday June 19, 2017.¹⁰¹

79. Second, an Oppenheimer analyst published a report prior to market open on June 19, 2017.¹⁰² That report suggested that CenturyLink’s “4.6% drop amid accusations

⁹⁹ *The News-Star*, “Suit Accuses CenturyLink of Wells Fargo-Like Scam,” June 17, 2017; *The Arizona Republic*, “Fired CenturyLink Worker Files Lawsuit Alleging Fraud,” June 18, 2017.

¹⁰⁰ “CenturyLink Is Accused of Running a Wells Fargo-Like Scheme,” Bloomberg News, June 16, 2017, 1:50 p.m. This article was updated from the original 1:50 p.m. release (and contains CenturyLink’s closing stock price).

¹⁰¹ Mr. Deal did not examine this response by CenturyLink management, but agrees it could be important to consider. *See* Deal Tr. 193:2-10 (“Q It means when you're assessing what caused the, you know, stock to react on these two days, the 16th and the 19th, statements by the company would be something you'd want to consider? A Sure. ... I certainly agree that statements by the company could be relevant, if it's a general question like that.”).

¹⁰² Deal Exhibit 31B, item 4, (“Buy CenturyLink on Drop After Lawsuit, Oppenheimer Says,” Bloomberg First Word, June 19, 2017 (8:47 EST)).

of a Wells Fargo-like scheme provides a ‘strong buying opportunity.’”¹⁰³ This too could have had a cushioning effect.

80. [REDACTED]

[REDACTED]¹⁰⁵

81. [REDACTED]

[REDACTED]^{106,107}

[REDACTED]¹⁰⁸ This large purchase – representing approximately three times CenturyLink’s average daily volume over the Class Period – could have signaled substantial support. Either that or the fact that it constituted sizeable volume could have cushioned the impact of any adverse information.

¹⁰³ “Buy CenturyLink on Drop After Lawsuit, Oppenheimer Says,” Bloomberg First Word, June 19, 2017, 8:47 a.m.; JFWBK_0014702.

¹⁰⁴ CTLMNSEC00918821 at CTLMNSEC00918822.

¹⁰⁵ *Id.* at CTLMNSEC00918821

¹⁰⁶ <https://uk.reuters.com/article/us-energen-covex-idUKKBN19A2W8>.

¹⁰⁷ In terms of the impact of an announcement of a 5% stakeholder, Mr. Deal testified: “When you say ‘have an impact on price reaction,’ I think what you’re asking is could the fact that they disclosed hey, you know, Carl Icahn is taking a five percent position in the company, is that the sort of thing that might move the stock price, yeah, I think it could, if that’s your question.” Deal Tr. 199:1-7.

¹⁰⁸ SCHEDULE 13D, filed 2017-06-16 17:02:49 (emphasis added). I note that there was a large positive jump in the price of CenturyLink common stock late in the day along with a substantial volume. This included the price of \$25.91.

82. Thus, these mitigating factors, which might have cushioned the price decline on June 19, 2017, suggest that the empirical evidence demonstrating “weak statistical significance” might nonetheless show that highly significant negative news was released.

c) The Two-Day Price of CenturyLink Stock Is Tied to the Alleged Curative Disclosures

83. Mr. Deal’s outright rejection of the two-day return I provided in my analysis of both the stock and the 7.6% Note has no support in (a) the timeliness of the response to news disclosed late in the trading day; (b) academic literature; and (c) court precedent. Mr. Deal relies on full trading days of 6.5 hours (or longer as discussed below) for all of his empirical analyses. Yet he dramatically shortens that period in connection with examining the impact of the information in the corrective disclosures.

84. Mr. Deal states:

It is unclear from his report whether Dr. Hartzmark is arguing that the price reaction on June 19, 2017 was a delayed reaction to news released on June 16 or was a reaction to new information that came to light over the weekend and on the day itself. Careful analysis does not support either argument. The delayed reaction argument is not plausible, given Dr. Hartzmark’s own evidence on market efficiency for CenturyLink stock. Additionally, Dr. Hartzmark and my analyses of intraday stock prices on June 16 and July 12 show that the stock price reacts rapidly (near-instantly) to the arrival of relevant news. Since the news was relatively straightforward, there is no reason to believe that the market needed additional time to process the information. The second argument, that it was new information or the cumulative effect of the new information that drove the stock price decline, is also not persuasive. As I have shown, the stock price movement does not correlate well with the arrival of specific news, and is marked by periodic positive spikes, which weighs against an accumulation of bad news theory.¹⁰⁹

85. Below I describe why this opinion is flawed. In my Opening Report, for both CenturyLink Securities I presented daily statistics for both June 16 and June 19, 2017, as

¹⁰⁹ Deal Report, ¶162.

well as certain t-statistics and p-values for the cumulative two-day returns. There were five reasons why I included these multi-day returns that any experienced financial economist would understand. First, the disclosure in the Bloomberg news release was at 1:50 pm – only two hours and ten minutes prior to the close of trade. Second, this was a somewhat atypical news story and certainly was not part of a normally scheduled corporate announcement — such as an earnings release, or dividend announcement — the date and time of which is generally known in advance. Third, the nature of the news was not immediately quantifiable, as reflected in contemporaneous internal CenturyLink documents concerning the disclosures and analyst commentary. Fourth, the news was not disclosed by CenturyLink, but by a third party. And fifth, one of the securities that is being evaluated in this matter is a corporate bond, which trades in an efficient market, but as explained in detail in my Opening Report, a market that has different features and characteristics from those of equity.

86. **Academic literature supports using a full trading day, and the disclosure June 16, 2017 was very late in the trading day.** Throughout most of the history of peer-reviewed financial economic academic literature, researchers have employed market close-to-close data to evaluate a disclosure's impact on price. This is also consistent with how the courts have evaluated price movements. This research certainly supports, at minimum, looking beyond a two-hour period, which is all that was remaining in the trading day on June 16, 2017 after the *Bloomberg* story about the Heiser complaint became public.

87. Conducting a full-trading-day analysis on the June 16, 2017 disclosure – which would incorporate several hours on June 19, 2017 – would yield a highly statistically significant result. A full trading day following the June 16, 2017 announcement would run until June 19, 2017, at 1:50 p.m. At that time, CenturyLink's stock price was \$25.30 per share – **lower** than the June 19, 2017 **closing** price of \$25.35 per share. Thus, the price decline over a full trading day following the *Bloomberg* story (*i.e.*, 1:50 p.m. on June 16 to 1:50 p.m. on June 19) is **greater** than the one-day close-to-close return I actually utilized for my daily return calculation.

88. **Complex information disclosed by third parties can certainly take longer than two hours (and even longer than a single trading session) to be fully digested.** Corporate information must first be disclosed. Then, it must be disseminated. After that, it must be digested by market participants, including analysts. This whole sequence can sometimes happen within minutes, particularly when news is disclosed by the issuer, the disclosure event is anticipated, and the information is easy-to-digest. However, academic literature is clear that the speed of response will depend on a number of factors, including: who make the disclosure, how the disclosure is disseminated, the complexity of evaluating the information in the disclosure, and the nature of the trading in or the microstructure of the particular securities market at issue.¹¹⁰

89. Clearly, the alleged corrective disclosure on June 16, 2017: would not have been anticipated in the way a scheduled announcement would be; included atypical, relatively complex, and less-easily-quantifiable information (factual allegations in lawsuits); and was made by a third-party unrelated to CenturyLink. Thus, it is reasonable to expect that the full dissemination and digestion of this information—particularly when the Company was issuing offsetting positive statements on the topic—could take longer than, for example, the processing of numerical information contained in a scheduled earnings announcement.¹¹¹ [REDACTED]

¹¹⁰ As I stated in my Opening Report, “It is not unusual that over a class period the corporation will announce earnings, dividends, discoveries, new products, management changes, new issues of securities, lawsuits that it files, lawsuits filed against it, projections, regulatory changes that impact its business, and more.” Hartzmark Report, ¶63. Clearly these are different types of information that take different skills to decipher. In addition, the rate of price response to information can be impacted by different disclosure platforms (third parties versus the company itself); different securities (bonds versus stock); and different times of the day for release (pre-market versus during the trading day).

¹¹¹ Mr. Deal agrees that earnings announcements are made in a different environment and might have different speed of response to other types of information. Deal Tr. 173:13-20 (“Q And analysts and investors and market participants are expecting that information will be disclosed on earnings announcement dates? A They’re expecting information to be disclosed. Obviously they have their own expectations of what that information will be, but, yeah, they’re -- they’re certainly watching for it, if that’s your question.”). Deal Tr. 175:2-8 (“Do you know or are you aware of any academic research showing that the length of time for information to be reflected in a stock price might differ based on the nature of the disclosure? A Not off the top of my

[REDACTED] 112

[REDACTED]

[REDACTED]

[REDACTED] 113 [REDACTED]

[REDACTED] 114

90. **Recognizing these facts, academics and the courts have realistically evaluated speed of response over multi-day windows.** Consistent with the points above, using multi-day returns is common in academic research.¹¹⁵

91. As also discussed in my Opening Report, it is also common in securities litigation. For example, a recent decision focusing on common stock, *Monroe County*

head. It wouldn't surprise me. I mean, that seems like exactly the kind of topic that finance guys might study.”).

Interestingly, Mr. Deal appears to have no problem lengthening the time period that he measures a pre-announcement price when examining the price responses of the 7.6% Note. In his analysis of the 7.6% Note, for his calculation of pre-announcement Note prices on dates where an announcement is made in the middle or late in the trading day he not only uses trades on that day prior to the announcement time, but also includes all trades on the prior trading day as well (*see* Deal Exhibit 33). Thus, he feels comfortable extending the pre-announcement time period but fails to incorporate the identical approach on the post-announcement price calculation.

¹¹² See, e.g., CTLMNSEC00918821 ([REDACTED]).

¹¹³ CTLMNSEC00929196.

¹¹⁴ CTLMNSEC00918676 ([REDACTED]).

¹¹⁵ Craig A. MacKinlay, *Event Studies in Economics and Finance*, 35 Jnl. of Econ. Lit. 13 (1997), pp. 14-15 (“MacKinlay makes clear that examination of stock price effects that occur on the second trading day is perfectly appropriate in event study analysis.”).

Employees Retirement System v. Southern Company, made it clear two-day windows can be appropriate.¹¹⁶ The *Monroe* court explained:

First, using exclusively one-day event windows does not change [] conclusion[s] concerning market efficiency. As a result, the debate about event windows in this case is largely academic. Second, there are many cases that find that multi-day event windows are appropriate for event study analysis in securities fraud class actions.¹¹⁷ Third, and more broadly, the Supreme Court has expressly refused to “adopt any particular theory of how quickly and completely publicly available information is reflected in market price.”¹¹⁸ Fourth, academic literature supports the use of two-day (or more) event windows.¹¹⁹ Fifth, the Court finds, in accordance with the academic literature, that when the particular facts and

¹¹⁶ *Monroe Cty. Employees’ Ret. Sys. v. Southern Co.*, 332 F.R.D. 370, 391 (N.D. Ga. 2019) (“*Monroe*”).

¹¹⁷ *Monroe*, 332 F.R.D. at 391 (collecting cases); *In re DVI, Inc. Sec. Litig.*, 639 F.3d 623, 635 (3rd Cir. 2011) (“That some information took two days to affect the price does not undermine a finding of efficiency.”), *abrogated on other grounds by Amgen Inc. v. Connecticut Retirement Plans and Trust Funds*, 568 U.S. 455, 133 S. Ct. 1184, 194 L. Ed. 2d 308 (2013); *In re Xcelera.com Sec. Litig.*, 430 F.3d 503, 513 n.11 (1st Cir. 2005) (rejecting argument that two-day window is inconsistent with efficient market); *Carpenters Pension Tr. Fund of St. Louis v. Barclays PLC*, 310 F.R.D. 69, 96 (S.D.N.Y. 2015) (“A two-to three-day window is common in event studies.”); *In re Vivendi Universal, S.A., Sec. Litig.*, 634 F. Supp. 2d 352, 372 (S.D.N.Y. 2009) (using three-day window); *Fogarazzo v. Lehman Bros.*, 263 F.R.D. 90, 104 (S.D.N.Y. 2009) (accepting event study with three-day window and rejecting argument that multi-day window only applied “where the timing of discrete events was [not] ascertainable”).

¹¹⁸ *Monroe*, 332 F.R.D. at 391 (“Following its decision in *Basic*, the Supreme Court in *Halliburton II* reiterated that it would not enter the fray of academic debates about the speed at which information is impounded into a stock price, and reconfirmed that market efficiency is based on the fairly modest premise that market professionals generally consider most publicly announced material statements about companies, thereby affecting stock market prices.” (internal quotation marks and citations omitted)).

¹¹⁹ *Monroe*, 332 F.R.D. at 391-392 (“For example, MacKinlay explains that two-day event windows are appropriate when analyzing earnings announcements. Professor Feinstein cited multiple other legal and academic papers endorsing the use of multi-day event windows and explaining that price reactions to news sometimes occur over two or more trading days, including a paper by David I. Tabak, who explains that ‘[i]n securities fraud cases, many experts have adopted the convention of looking at one-day, two-day, or five-day periods following an announcement.’ ... [Although] stock price reactions generally *begin* quickly, this does not necessarily mean that stock price reactions always *end* quickly. Rather, as Professor Feinstein explained, ‘[i]t is not settled science that an efficient market price reaction is over within a matter of minutes.’” (emphasis in original)).

circumstances justify investigating multi-day event windows, such analysis is appropriate. Finally, the Court rejects Defendants' suggestion that [multi-day] analysis should be disregarded because [it] did not analyze *only* one-day windows or *only* two-day windows. The Court is unaware of any rule, and Defendants cite none, requiring that one must commit at the outset, before analyzing the data, to investigate only one-day or only two-day event windows. [An] event study analysis is "an investigation, and the results might compel you to look at a larger window."¹²⁰

92. It is clear from this decision and the approach of many other courts that the use of a multi-day window is reliable for evaluating whether a security trades in an efficient market.¹²¹ These courts have realized that it might take more than a trading day for news to be disseminated and digested (or processed) by interested parties.

93. *The facts here support a window extending beyond the close on June 16.* In this matter, the "particular facts and circumstances" justify investigating multi-day event windows. As set forth above, the June 16 disclosure happened very close to the end of the trading day – so a "two-day" window for that disclosure is actually closer to a single trading session than a "one-day" window, which comprises approximately two hours. Using the "two-day" window allows the analysis to account for the time it would take for market participants to become aware of the third-party disclosures, fully evaluate and process the new, unanticipated, material information contained in them, and act on it—which the limited documentary evidence reviewed suggests in fact happened. This, in combination with the release of new information over the weekend of June 17-18, 2017 and additional information released on June 19, 2017, justifies the use of a "two-day" event window. In addition, the new information released on June 19, 2017 is alleged to be directly related and in response to the information disclosed on June 16, 2017, which would further support using a two-day event window.

¹²⁰ *Monroe*, 332 F.R.D. at 393 (emphasis in original).

¹²¹ *See* n. 117.

94. Although Mr. Deal does not provide a two-day cumulative return, based on his back-up materials, he reported t-statistics for June 16 and June 19, 2017. Therefore, I was able to calculate the statistical significance of his model. His model, like mine, also yields a two-day return that is statistically significant.¹²²

6. *Mr. Deal's Conclusion that "June 16, 2017, has no statistical significance for the 7.60% Notes" Is Flawed and Based on His Limited Event Window, including His Inconsistent Application of VWAP Calculations*

95. As I explained in my Opening Report, academics, industry participants and courts have accepted the fact that the microstructure, features and characteristics of corporate bond markets are different from those of equity markets. I explained why academics, industry participants and courts, understanding these differences, have accepted that in efficient securities markets the speed of response of a corporate bond price for a given issuer might not be as rapid as the equity price for the same issuer. This is obvious, simply from the construction of the prices that are employed by expert economists, such as both Mr. Deal and myself. In academic and court evaluated equity analyses it is generally the case that closing prices are used. Because of the structure, features and characteristics of corporate bond markets, volume-weighted transactions prices (VWAP) are generally used.

96. Although Mr. Deal and I agree that the 7.6% Note traded in an efficient market, and Mr. Deal agrees that the use of VWAPs that I used for determining daily prices of the 7.6% Note is an appropriate methodology,¹²³ Mr. Deal, without any specific support, introduces two issues into his empirical analyses. First, he dismisses the use of full trading sessions for his analysis of price changes. Second, he proposes an alternative method to

¹²² Based on taking the sum of Mr. Deal's t-statistics of -4.54 and -0.68, and dividing by the square root of 2, yielding a t-statistic of -3.69 which is statistically significant at the 99% confidence level.

¹²³ Deal Report, ¶170 ("Therefore, instead of using the closing price to calculate daily returns, as is typically done in equity event studies that rely on daily market data, academic research recommends the use of daily average transaction prices that are weighted by trade size, also known as volume weighted average prices ('VWAP').") (footnote omitted).

calculate prices before and after the time of the alleged corrective disclosures.¹²⁴ These are critically important differences, given that I analyzed price changes that resulted from announcements that took place during the trading days, and for the most part in the later portion of the trading days. These included the alleged corrective disclosure dates (June 16, 2017 and July 12, 2017) and two dates with credit ratings downgrades (March 13, 2014 and October 31, 2016). The “markedly different” abnormal returns that Mr. Deal finds are thus wholly attributable to his different pre- and post-announcement prices on the alleged corrective disclosure dates.

97. Therefore, the distinction between the purportedly “markedly” different abnormal returns is a matter of (a) the different definition of the pre- and post-announcement VWAPs; and (b) the event windows for June 16 and June 19. For June 16, 2017, I have effectively measured the return based on the price movement on the trading day following the late-afternoon disclosure; and for June 19, I have measured the return in the same manner and also including the next trading day, June 20. If Mr. Deal’s return series is analyzed on the same window as I used for June 16 – *i.e.*, pre-announcement for June 16, 2017 through June 19, 2017 – his abnormal return becomes very similar to mine: Mr. Deal’s is -2.63%, which mine is -2.65%.¹²⁵

¹²⁴ For all four of these dates, Mr. Deal calculates VWAPs based on the following methodology. For the pre-announcement price, Mr. Deal modifies his VWAP calculation to include all transactions during stock market trading hours (9:30 a.m. through 4:00 p.m.) the day prior to the announcement, as well as all trades during stock market hours up until the time of the announcement on the day of the announcement. For post-announcement price, Mr. Deal modifies his VWAP calculation and includes those trades over a few hours that occurred prior to the closing of the stock market trading hours after the time of the announcement only on the announcement day (*see* Deal Exhibit 33). I am not sure why Mr. Deal arbitrarily includes an entire day prior to the day of the announcement in his pre-announcement price but limits the post-announcement price to only those trades occurring after the announcement on the day of announcement only.

¹²⁵ -2.63% equals the compounded Deal abnormal returns of -0.65% for June 16, 2017 and -1.99% for June 19, 2017. The t-statistic of the 2-day window is 3.03, based on the sum of Mr. Deal’s daily t-statistics of -1.09 and -3.20, divided by the square root of 2, which is statistically significant at the 99% confidence level.

98. In summary, Mr. Deal's conclusion that "June 16, 2017, has no statistical significance for the 7.60% Notes"¹²⁶ is based on his different definition of pre- and post-announcement VWAPs and his choice of a shorter event window relative to those I employed in my analysis. Neither of Mr. Deal's differing assumptions is obviously preferable to mine, and so his analysis does not provide evidence demonstrating a lack of price impact.

B. Mr. Deal's Opinion Is Based Upon His Flawed Conclusion that the Front-End Misstatements Might Not Be Inflationary Disclosures

99. Mr. Deal also claims that an analysis of the numerous alleged *Front-End misstatements* during the Class Period shows a lack of price impact. Mr. Deal claims that, in light of the "five different categories" of alleged misstatements that were made over a "long Class Period" during which CenturyLink and its industry underwent "massive" changes, as well as the alleged changing nature of "revenue impact" of alleged cramming behavior, I have not "offered a damages model capable of identifying the price impact, if any, of the various types and degrees of allegedly inflationary misconduct and [have] not proposed how to separate price impacts attributable to other non-fraud factors in this dynamic economic context."¹²⁷

100. Just like his purported analysis of the Back-End corrective disclosures, Mr. Deal's examination of the Front-End disclosures is flawed. It certainly does not constitute reliable economic evidence that the misstatements lacked price impact.

1. The Conceptual Framework Behind Mr. Deal's Front-End Analysis is Flawed

101. The keystone of Mr. Deal's analysis is an examination of price movements on 52 alleged Front-End misstatement dates. Mr. Deal's approach is to determine how many of those 52 dates evinced statistically significant positive stock price movements. He found that four dates and appears to conclude, on that basis that there was a lack of

¹²⁶ Deal Report, ¶36.

¹²⁷ Deal Report, ¶35 (emphasis added).

evidence that the misstatements in the Complaint impacted CenturyLink's stock price.¹²⁸ Setting aside that an absence of evidence is not an evidence of absence—*i.e.*, Mr. Deal's analysis, even if were coherent, would not disprove price impact—there are major conceptual problems with the approach he employs.

102. Implicit in Mr. Deal's analysis is an assumption that an actionable misstatement should be associated with a stock price movement that is statistically significant and positive. As a matter of economics, however, there is simply no such necessary relationship. While a misstatement that introduces or maintains inflation could be associated with a statistically significant stock price increase, there are perfectly logical reasons supported by the fundamental principles of finance why it might be associated with no significant price change at all, or even with a stock price decrease. For example, a misstatement that causes a company to appear to meet market expectations or a failure to disclose a negative fact might introduce inflation into a stock by preventing its price from decreasing – even though it would not be expected to cause a price increase. Similarly, a misrepresentation that repeats a prior misrepresentation might maintain an already inflated stock price without causing the price to increase significantly. And even a false statement that, in a vacuum, would be expected to increase a company's stock price might not have such an effect if it coincides with negative news from the company – and indeed, the stock price might even decline (as it might also with price maintaining statements and omissions).

103. In short, understanding the context of the allegations matters. As is further explained below, I conclude, based on my analysis of the Complaint, that, of the 52 dates on which Mr. Deal expects stock price increases, more than 50% contain disclosures that, based on their nature or context, would not be expected to be associated with stock price increases. These include statements that repeat previous misstatements, statements that simply confirm anticipated results, and statements that omit material information. A trained financial economist should know in advance to expect that these dates would not

¹²⁸ Deal Report, ¶¶10, 140.

necessarily be expected to “have impacted CenturyLink’s securities prices.” Indeed, the Complaint and the Court’s motion to dismiss order included numerous discussions that certain misrepresentations were repetitive, were actionable omissions, or would have expected to maintain (but not necessarily further augment) inflation, such that no positive stock price movement should have been expected.¹²⁹ Mr. Deal’s failure to account for such factors in his analysis of the purported lack of Front-End price impact makes his analysis entirely unreliable.

104. Second, like his analysis of the alleged Back-End corrective disclosures, Mr. Deal admits his analysis is “preliminary,” “illustrative” and based on limited information and knowledge, as well as devoid of reference to or reliance upon even a single CenturyLink internal or non-public document.¹³⁰ After observing dates with statistically significant positive abnormal returns, Mr. Deal simply recites limited financial information that was disclosed that day, concluding from his cursory evaluation that price impact has not been shown. Because his statistical tests are not meaningful, and he does not consider additional evidence, his opinion cannot establish a lack of price impact.

2. Why Mr. Deal’s Inclusion of 52 Dates Is Flawed and Potentially Misleading

105. Mr. Deal claims:

Plaintiffs identify allegedly inflationary disclosures on 55 different calendar days, which could potentially have impacted CenturyLink’s securities prices on **52 different market days**, spread across each quarter over a 4+ year Class Period.¹³¹

106. As discussed above, Mr. Deal’s inclusion of all 55 calendar dates with alleged misstatements as being expected to have “allegedly inflationary disclosures” misreads the

¹²⁹ For example, Section V.A.

¹³⁰ Deal Tr. 116:13-117:1 (“Q I want to clarify it because I think it’s important. Have you looked at any internal CenturyLink documents dated during the class period? THE WITNESS: Just give me a moment here....The answer is no.”).

¹³¹ Deal Report, ¶9 (footnote omitted).

Complaint.¹³² For example, the Complaint explicitly states that numerous dates are associated with disclosures that were likely repetitive. For example,

CenturyLink repeated these statements throughout the Class Period, including in its annual reports filed on Form 10-K for fiscal year 2013 (the “2013 Annual Report”), filed on February 27, 2014; fiscal year 2014 (the “2014 Annual Report”), filed on February 24, 2015; fiscal year 2015 (the “2015 Annual Report”), filed on February 25, 2016; and fiscal year 2016 (the “2016 Annual Report”), filed on February 23, 2017”¹³³

107. Similarly:

The Company repeated this same statement in its 2013, 2014, 2015, and 2016 Annual Reports. Similarly, during investor conference calls on March 9, 2015, June 4, 2015 and March 7, 2016, Defendant Ewing stated “[w]e’re committed to being the broadband leader in our markets, offering advanced broadband services that meet the needs of our customers.”¹³⁴

108. In addition, the Complaint alleges misrepresentations that, by their nature, would not be expected to impact securities prices. For example, the Complaint alleges that the company made misrepresentations in its Code of Conduct, but in my experience, investors expect a company to adhere to its code of conduct – so while the statements assuring compliance were alleged to be false, they would nonetheless be in line with investor expectations and would not be expected to necessarily cause securities price

¹³² Mr. Deal appears to have read the Complaint and interpreted it differently than the clear language suggests. Deal Tr. 135:19-136:12 (“Q And you’re saying -- again, the premise of a lot of your opinion is that there’s a physical be it quantifying or measuring that mix of information. Is that a fair statement? A I certainly agree with that, that there’s a lot of information. You have alleged 55 days of inflation, 52 of which where they expected to move the stock price five categories and so forth. On each of -- those days have lots of other information out there, so, you know, a form of your hypothetical is to say do I observe, you know, the first day -- the first information going up, and then all the rest of them are simply repetitions of exactly the same information, so I wouldn’t expect it. I don’t think that’s how you pled your case, but conceptually that would be a form of it. But I’m just saying that we don’t observe those incremental inflation occurring from those other days.”).

¹³³ Complaint, ¶195 (emphasis added).

¹³⁴ Complaint, ¶197 (emphasis added and removed).

increases. Nor would it necessarily be expected that positive price movements would be observed when CenturyLink's management denied violations of the Code of Conduct.

109. Similarly, the Complaint alleges numerous actionable omissions, including CenturyLink's failure to disclose material, negative facts in violation of Item 303.¹³⁵ It is hard to see why, from an economic standpoint, such omissions would necessarily be expected to be associated with a significant stock price increase; rather, a more natural interpretation is that the omissions prevented a stock price decrease (all else equal).

110. Below, I have identified more than 50% of the dates in Mr. Deal's analysis on which a trained financial economist would not necessarily expect to observe statistically significant returns. The largest category is associated with duplicate disclosures, which might have been material, but would not necessarily have been unanticipated, so would not have been expected to have impacted the price. The Complaint alleges that numerous false and misleading statements were repeated throughout the Class Period. In addition, CenturyLink, like most other publicly traded companies, issued earnings releases and held earnings conference calls *in advance* of their 10-K and 10-Q filings. So even though the dates CenturyLink filed its SEC Form 10-Ks and 10-Qs are dates with alleged misstatements (and are included in Mr. Deal's 52-day sample), it would not necessarily be expected that the information in those releases that had been previously announced in earnings releases and/or on conference calls would cause stock price increases. Similarly, in my experience as an academic, public company CEO and CFO, a public company's proxy statement (SEC Form 14DEFA) would not necessarily be expected to include unanticipated information, because proxy statements often repeat previously-disclosed information.

111. Likewise, as mentioned above, assurances by company management that they are adhering to publicly disclosed Codes of Conduct or other commonly observed business practices would not be expected to yield price increases. Similarly, a company's false denials that it was engaging in misconduct—*i.e.*, that it acted in accordance with

¹³⁵ Complaint, ¶¶203, 221-24, 261-63.

widespread behavioral norms, such as when CenturyLink denied misconduct in connection with the Arizona A.G.’s consent order - would not be expected to cause price increases.¹³⁶ Third-party disclosures that might not be immediately widely disseminated would also not necessarily be expected to cause immediate price increases.

112. In the table below, I show that Mr. Deal included at least 27 dates, or 52% of his 52-date sample, on which a trained financial economist would not necessarily expect the information disclosed to “have impacted CenturyLink’s securities prices.”

	Dates	Cummulative Dates
Deal Figure 5 Purported Misrepresentation Dates	52	52
Duplicates -- 10-K and 10-Q following Earnings Announcements	15	37
Proxy Statements without Material Unanticipated Information	5	32
No Dissemination of Media Report to Business Press	5	27
Non-Public Document Filed by Company	2	25

113. Therefore, instead of the 52 dates Mr. Deal relies upon for his flawed Front-End analysis, there are only 25 dates that, based on a cursory review, *might* reasonably be expected to evince a positive price movement. This, of course, does not account for other factors I identified, such as contemporaneous disclosure of negative information, which could further reduce the number of days on which positive stock price movements could reasonably be expected.

¹³⁶ See Complaint ¶247.

3. Mr. Deal’s “Preliminary” Analysis¹³⁷ of the Price Movements on the Four Days with Statistically Significant Price Movements Is Unreliable and Potentially Misleading

114. Mr. Deal appears to contend that having “only four” dates with “statistically significant positive abnormal returns”¹³⁸ is evidence of a lack of price impact. He also purports to analyze those days and show that the significant stock price might have been caused by other factors. Mr. Deal’s conclusions are unsupported.

115. As a preliminary matter, as set forth above, Mr. Deal’s test is wrong to consider 52 days as the number of days on which statistically significant stock price increases would be expected. Rather, there are only really 25 days, at most, where such increases **might** be expected, based on the allegations of the Complaint. According to generally-accepted principles of statistics, random chance would explain approximately one statistically significant stock price movement in 25 days, if statistical significance is determined at the 95% level.¹³⁹ Thus, the four days Mr. Deal identifies are approximately four times as many as would be expected by chance.

116. Mr. Deal’s subsequent analysis of the four days is also flawed. Mr. Deal purports to conduct a “preliminary” or “illustrative” examination, which is little more than a paragraph of recitation of events occurring on each of the four dates.¹⁴⁰ This cannot be

¹³⁷ Deal Tr. 31:9-13 (“You’ll probably recall that I also did do at least a -- I would call it a preliminary analysis of the days and trying to map that at least, again, preliminarily and broadly to the allegations, the five categories of allegations.”); 32:15-19 (“Q And you mentioned that this was just a preliminary analysis; is that right? A Yeah. I would call it kind of illustrative. And my -- so it’s not intended to be the final.”); 74:1-10 (“Q As part of that, though, you haven’t developed your own model, again, proving the impossibility? A ... again, I haven’t been asked to take it all the way through to there, but I have gone down that path by doing all the analysis I’ve done,...”).

¹³⁸ Deal Report, ¶72 (italics in original) (“Among all 52 days on which the alleged misrepresentations potentially could have impacted CenturyLink’s stock price, *only four* have statistically significant positive abnormal returns.”).

¹³⁹ For a discussion of these issues see Hartzmark Report.

¹⁴⁰ Deal Report ¶¶73-76 or literally four paragraphs represent the sum total of Mr. Deal’s analysis of these four, what he views in Deal Report (¶72) as “days on which the alleged misrepresentations potentially could have impacted CenturyLink’s stock price.”

considered an in-depth and reliable economic examination of whether these dates evinced price impact from misstatements.¹⁴¹

117. Most critically, Mr. Deal does not even attempt to show that the price increases on the four dates were caused entirely by some factor other than the misstatements alleged in the Complaint. At most, he tries to show that CenturyLink's financial results could, in theory, explain some of the price increases. This analysis is flawed for at least two reasons.

118. First, the Complaint alleges that CenturyLink's financial results were generally inflated by sales misconduct, and Mr. Deal provides no affirmative evidence to show that the revenue results and financial performance he posits as an alternative explanation were not, in fact, driven in material part by CenturyLink's sales practices. Indeed, Mr. Deal does not investigate the alleged misstatements to determine whether it is reasonable to infer that they might or might not have caused price increases. Moreover, a cursory examination of the Complaint's allegations suggests that these dates generally coincided with positive revenue news that the Complaint alleges was driven, at least in part, by the Company's alleged sales misconduct.¹⁴²

119. Second, Mr. Deal fails to acknowledge that the latter three dates, including *November 5, 2015* (CenturyLink's Q3 results), *February 11, 2016* (CenturyLink's 4Q 2015 results), and *December 7, 2015* (UBS Research Communications Conference disclosures)

¹⁴¹ All Mr. Deal's preliminary analysis demonstrates is that there are the common complexities in most earnings announcements. Deal Tr. 72:10-20 ("...I dig deep into those four days where I see positive abnormal returns and I see there's lots of things being disclosed and discussed on those days. So my conclusion is on those that not only is it complex, I agree with that, and one needs to propose a model that could deal with that complexity, which in my view is that has not been proposed, but also that it's going to be very, very hard, if not impossible, to actually show that; to show that there's any price impact...").

¹⁴² See, e.g., Complaint ¶¶117 (pleading that November 2015 disclosures touting consumer segment revenue growth failed to "disclose the true driver of this sales growth," which was misconduct); ¶¶210-11 (discussing November 2015 disclosures and also Ewing's December 7, 2015 statement, which were alleged to falsely attribute revenue gains to legitimate causes instead of sales misconduct); ¶¶221 (alleging that explanations of revenue growth given in February 2016 were false and misleading because they were actually due, at least in part, to the Company's return to misconduct).

coincide with the disclosures of financial information associated with the period wherein the Plaintiffs have alleged that cramming activity accelerated. The Complaint alleges:

Just a month later, on June 2, 2015, and just three months after the Company announced that Defendant Puckett had been promoted to the head of global sales, CenturyLink announced that Defendant Puckett was leaving the Company. No explanation was given for her departure. A press release announcing the move quoted Puckett as saying that she was “looking forward to spending more time with my family and considering other leadership opportunities that allow me to continue to have a significant impact.”

Shortly thereafter, CenturyLink’s return to the metrics-based system and strict enforcement of sales quotas began to take hold.¹⁴³

120. The impact of this activity would have been incorporated into CenturyLink’s Q3 financial results reported on November 5, 2015, CenturyLink’s 4Q 2015 earnings release issued on February 11, 2016, and in the disclosures made at the UBS Research Communications Conference held on December 7, 2015. Therefore, it is at minimum consistent with the allegations in the Complaint that artificial inflation could have been introduced into the CenturyLink Securities’ prices on those dates.¹⁴⁴

4. *Summary of Mr. Deal’s Flawed, Unreliable and Potentially Misleading “Preliminary” Analysis of Front-End Price Movements*

121. Mr. Deal’s “preliminary” and “illustrative” analysis of the alleged misstatement dates is unreliable for several reasons. First, it is based on a flawed sample that overstates the number of dates where it would be expected that there would be inflation introduced into the market price. Second, it is based on a simple recitation of certain aspects of information disclosed at the same time as each of four alleged Front-End

¹⁴³ Complaint. ¶¶116-117.

¹⁴⁴ As discussed below, this does not mean that inflation was not introduced earlier or on different dates, as even the courts have agreed that “a public, material misrepresentation might not affect a stock’s price even in a generally efficient market.” See *Halliburton II* at 2414.

misstatements when there were positive statistically significant returns, as opposed to an in-depth price impact or loss causation analysis. Third, it is improperly premised on requiring there to be a positive statistically significant price movement for inflation to have been introduced into the market price.

122. Critically, these key conceptual flaws mean that Mr. Deal's Front-End analysis does not show that there was an absence of price impact from the alleged misrepresentations in the Complaint.

VI. MR. DEAL'S CRITICISMS OF THE PROPOSED DAMAGES METHODOLOGY ARE SIMPLY CLASS-WIDE COMMON ISSUES RELATED TO LOSS CAUSATION AND THE CONSTRUCTION OF AN ACTUAL INFLATION RIBBON

123. In my Opening Report, I explained that Damages would be calculated using the OOP method, which is virtually the universal standard in securities class actions arising under Section 10(b), and which is tied to the theory of liability in Section 10(b) cases.¹⁴⁵ I also explained that the major input into the OOP method is the inflation ribbon, which measures the level of artificial inflation in the stock price each day, and which is common to the class.¹⁴⁶ Mr. Deal does not dispute that the OOP method is the appropriate method for calculating damages in this case, that its major input is the inflation ribbon, or that the inflation ribbon is common to the class.¹⁴⁷

124. Mr. Deal's criticism of my proposed damages methodology focuses on what he asserts is my failure, in my Opening Report, to construct an inflation ribbon at the class certification stage, or to describe precisely how I would construct an inflation ribbon in this case. As he states:

[Dr. Hartzmark] has neither done, nor described, any method to measure, parse, or scale inflation around the alleged corrective disclosures [as well as] parse and scale the inflation ribbons to

¹⁴⁵ Hartzmark Report, ¶¶184-92.

¹⁴⁶ Hartzmark Report, ¶¶186-91.

¹⁴⁷ Deal Tr., at 212:21 – 213:11, 215:20 – 217:13.

account for the combinations of the five categories of alleged misrepresentations, the 52 alleged inflationary dates, the nearly year-long alleged “low cramming” period in the middle of the Class Period, and the three alleged corrective disclosure dates.¹⁴⁸

125. In addition, Mr. Deal has opined that constructing an inflation ribbon will be difficult, if not impossible, in this case, due to what he claims are extraordinary complexities present here.¹⁴⁹

126. As I explain in more detail below, having reviewed Mr. Deal’s Report and deposition testimony, my opinion is that the issues Mr. Deal raises are irrelevant and premature. Mr. Deal’s concerns are irrelevant because every issue he raises is common to the class, and therefore, as I understand from Plaintiffs’ Counsel, fails to bear on the question of whether or not the class should be certified in this case. The issues he raises are also premature, because as I understand based on my experience and from Plaintiffs’ Counsel, they are addressed at later stages of litigation, typically following completion of discovery, further expert work, and determinations of liability.

127. In addition, based on my extensive experience as an expert in securities class action cases, my opinion is that Mr. Deal’s contentions about the difficulty or impossibility of calculating damages here are incorrect because commonly-used economic techniques exist that can address the issues he identifies and, in any event, to the extent the supposed complexities he cites materialize at all, will likely be simplified through further factual and expert discovery and adequately dealt with by the time any damages analysis is conducted. For these reasons, I continue to hold the opinion that, as in virtually every Section 10(b) securities class action, damages here can be calculated on a class-wide basis using the OOP method described in my Opening Report.

¹⁴⁸ Deal Report, ¶12 (emphasis added). Parsing is also mentioned in multiple other paragraphs, including ¶¶10, 14, 16, 24, 68.

¹⁴⁹ See, e.g., Deal Report, ¶¶10, 72, 77, 186; Deal Tr., at 34:16 – 35:14, 37:7 – 13, 74:9 – 14, 217:16 – 218:21.

A. Mr. Deal's Reliance on Purported "Complexity" Is a Red Herring

128. Mr. Deal's primary opinion can be summarized as follows: *because of certain purported "complexities" specific to this CenturyLink matter, it will be challenging, if not impossible, to construct the actual inflation ribbon*. Specifically, according to Mr. Deal, "the ribbon would need to incorporate the complexity of the allegations in this Action:"

- It would need to be scaled to vary over time ...;
- It would need to be further scaled to account for the alleged "low cramming" period in the middle of Class Period;
- It would need to be parsed to account for the five different categories of alleged misrepresentations...;
- It would need to be scaled to vary across the ... alleged corrective disclosure dates;
- It would need to account for the FUD affecting stock and bond prices vs. any truth to the allegations in the lawsuits and investigations, including any material resolution, findings, or expected material impact on future cash flows.¹⁵⁰

129. As an initial matter, these purported "complexities" are irrelevant to the question of whether a common damages methodology exists because each of these issues is common to the class. Mr. Deal admitted as much during his deposition, when he testified that issues concerning the construction of the inflation ribbon are common issues that raise no predominance questions.¹⁵¹ As I explained in my Opening Report, the OOP method is flexible, and can accommodate variations in its inflation ribbon input while mechanically determining damages.

130. Relatedly, these issues are plainly premature, given their dependence on contested liability questions that will be determined in this litigation at a later date, following the conclusion of discovery and (likely) additional expert work. For example, unless specific categories of alleged misstatements are eliminated from the case, it is likely

¹⁵⁰ Deal Report, ¶186 (emphasis omitted).

¹⁵¹ Deal Tr. 216:22-217:13.

there will be no need to parse their effects as measured by the corrective disclosures when constructing the inflation ribbon. Likewise, unless FUD is found to be a separate, nonfraudulent cause of the securities price declines on corrective disclosure days, there will be no need to “account” for it in the inflation ribbon. Given that cases typically evolve over the course of discovery, summary judgment, and trial, and the inflation ribbon will necessarily need to accommodate any relevant developments, actually constructing it at the class certification stage – which Mr. Deal complains I have not done¹⁵² – would be an illogical exercise.¹⁵³

131. Moreover, as a general matter, given my experience as the consulting and testifying expert in dozens of class action securities matters with claims under Section 10(b), it is my opinion that the purported “complexities” Mr. Deal cites are hardly unique to this CenturyLink matter. Some combination of parsing, scaling, multiple allegations, and different categories of misrepresentations needs to be accounted for in virtually every securities matter, whether it involves a class action or an individual lawsuit.¹⁵⁴ Assuming

¹⁵² Deal Report, ¶12. Indeed, Mr. Deal’s arguments could be read to suggest that it is necessary, at class certification, for plaintiffs to put forth **multiple potential** inflation ribbons, to account for the various permutations of factual and legal developments that **could** occur. Clearly, that is not required, because whatever those inflation ribbons turn out to be, they would be applied on a common basis to all class members.

¹⁵³ As discussed above, Mr. Deal critiques my Opening Report for assuming that the allegations in the Complaint will be proven at trial. It is my understanding from counsel that such an assumption is not only appropriate at this stage, but even at the damages stage. *See Sancom, Inc. v. Qwest Communications Corp.*, 683 F.Supp. 2d 1043, 1068 (D. S. D. 2010) (“And, it is well-settled that a damages expert like Canfield can testify as to damages while assuming the underlying liability.”). In any event, as set forth in more detail below, the OOP methodology is flexible, and can account for changes in the inflation ribbon due to liability determinations made in the case.

¹⁵⁴ Mr. Deal contrasts the purported complexity in this matter to what he considers to be an (unrealistic) “classic” case in ¶¶4-5, 8, and 106-107. Mr. Deal uses the term “complex” “complexities,” “complexity” seventeen times in his report to make the irrelevant point that in his view this case is more complex than what he refers to as the unrealistic simplistic “classic” securities matter.

I note, that although Mr. Deal claims this is a very complex matter, when it comes to the nature of the misstatements and alleged corrective disclosures and the speed of response he asserts the opposite, stating that corrective disclosures revealed “relatively straightforward information.” Deal tr. 176:17-22.

parsing and scaling were appropriate at a later stage of this case, there are many techniques that are routinely used to reliably and reasonably estimate the portion of the price reaction caused by misrepresentations and alleged corrective disclosures.

132. For parsing and scaling, these often include utilizing, among other inputs: intraday pricing analysis (if disclosures are made at different times); analysis of market and media commentary; examination of the elements that cause changes in actual or estimated earnings-per share or EBITDA (by individual analysts, the company or a consensus of analysts) over time; analysis of detailed accounting and company information, such as a breakdown of revenues and earnings for different divisions, businesses, types of customers, facilities, geographic locations, products, etc.; analysis of quantifiably industry trends and other data; and other methods. In addition, material produced in discovery could shed light on issues such as the scale and scope of misconduct and the underlying reasons for the disclosures (if such reasons were misstated or omitted), and other expert testimony related to liability issues could also provide a basis or relevant inputs for parsing and scaling.

133. That these concerns are not unusual or specific to this matter is evinced by that fact that Mr. Deal's complexity arguments and criticisms of my common damages methodology closely mimic challenges to a common damages methodology that have been made in numerous other securities class actions.

134. Indeed, Mr. Deal testified that in one of his consulting engagements, *City of Pontiac v. Dell*, he led an Analysis Group team that was "exactly addressing class certification issues, very similar, actually, to the report that I've offered in terms of the basic framing and issues."¹⁵⁵ In that case, in its class certification opinion, the Court stated:

Although the corrective nature of a disclosure and the prior disclosure of the substance of the alleged misrepresentation

¹⁵⁵ Deal Tr. 60:19-61:1. Mr. Deal raised the *Dell* matter in explaining that he had never offered an opinion at the class certification stage in a Section 10(b) securities class action but had supported other experts in similar matters. Deal Tr. 50:2-51:7. While the *Dell* case was the one such consulting matter he was able to identify by name in the past six years—*i.e.*, since *Halliburton II* was decided—it is my understanding from Counsel that the expert he supported, Prof. Hubbard, submitted a report *after* the class certification stage, and did not offer an opinion at class certification. Deal Tr. 58:3-17, 60:9-61:6.

both bear on the issue of price impact, they do not affect the question of predominance at the class-certification stage. *See Halliburton II*, 134 S. Ct. at 2416. That is because both issues will apply to all plaintiffs' claims on the merits. "The class is entirely cohesive: It will prevail or fail in unison. In no event will the individual circumstances of particular class members bear on the inquiry." *Amgen Inc. v. Connecticut Retirement Plans and Trust Funds*, 568 U.S. 455, 460, 133 S. Ct. 1184, 185 L. Ed. 2d 308 (2013). Finally, the court finds that Defendants' contention that other factors unrelated to the alleged misrepresentations contributed to the price decline at the end of the Class Period relates to the issue of loss causation and therefore cannot serve to rebut the *Basic* presumption of reliance at class certification. *See Erica P. John Fund, Inc. v. Halliburton Co.*, 563 U.S. 804, 813, 131 S. Ct. 2179, 180 L. Ed. 2d 24 (2011) ("*Halliburton I*"). Consequently, the court finds that the Retirement System has satisfied the requirements of Rule 23(b)(3). Therefore, the court concludes that class certification is appropriate.¹⁵⁶

135. Most of the matters I opine on have, like this matter, "complexities" such as multiple alleged misrepresentations and multiple corrective disclosures – and, unlike this matter, frequently exhibit the **added** complication that some alleged misrepresentations or corrective disclosures were dismissed prior to the filing of a motion for class certification. For example, this was the case in my recent expert engagement in *Signet*,¹⁵⁷ where the Defendants' expert critiqued my proposed common damages methodology stating:

Dr. Hartzmark's proposed analysis is not a reliable methodology for measuring alleged artificial inflation throughout the Class Period consistent with Plaintiff's Claims in this matter. Nor am I aware of a method that could reliably be applied to the multifaceted and numerous purported corrective disclosures to estimate inflation over the four-and-a-half-year purported Class Period. The confounding (i.e., nonfraud) information disclosed in the numerous purported corrective disclosures, many of which are disappointing

¹⁵⁶ *City of Pontiac Genl. Emps. Retirement Syst. v. Dell Inc.*, 2018 WL 1558571, at *6 (W.D. Tex. Mar. 29, 2018).

¹⁵⁷ *In re Signet Jewelers Limited Sec. Litig.*, 2019 WL 3001084 (S.D.N.Y. 2019).

earnings announcements, cannot be controlled for in an event study such as the one Dr. Hartzmark employs.

Industry developments such as declining mall traffic had a disproportionate negative effect on Signet's business model that help account for disappointing earnings announcements, a fact that would not be captured in the event study results. Moreover, there is no reliable basis to calculate inflation over the four-and-a-half year purported class period based on the price reactions to the alleged corrective disclosures even assuming away the issue of confounding information.¹⁵⁸

The fundamental reason Dr. Hartzmark has failed to provide a reliable method to calculate class-wide damages is the inability to control for confounding (i.e. nonfraud) information.¹⁵⁹

In total, there are nine corrective disclosures ... [and a]ll these disclosures suffer from the general problem of nonfraud factors documented above.¹⁶⁰

Furthermore, Dr. Hartzmark has failed to provide a reliable method to "adjust" for inflation for each day of the Class Period using the corrective disclosure price reactions. The Class Period spans a period of four and half years, involving dozens of alleged misrepresentations - many on earnings announcements, and nine alleged corrective disclosures over a period of almost two and half years that allegedly revealed the "truth."¹⁶¹

For all the reasons discussed above, Dr. Hartzmark has not provided a reliable method to calculate damages in this matter and, based on the challenges in this case, I am not aware of a common methodology to do so.¹⁶²

¹⁵⁸ Expert Report of Allen Ferrell Ph.D., *In Re Signet Jewelers Limited Securities Litigation*, April 26, 2019, S.D.N.Y Case No. 1:16-cv-06725-CM, Dkt. 148-1 ("Ferrell Signet Report"), ¶50 (emphasis added).

¹⁵⁹ Ferrell Signet Report, ¶52 (emphasis added).

¹⁶⁰ Ferrell Signet Report, ¶58 (emphasis added).

¹⁶¹ Ferrell Signet Report, ¶62 (emphasis added, footnote omitted).

¹⁶² Ferrell Signet Report, ¶63 (emphasis added).

136. The *Signet* matter was as or more complicated than this case: it concerned allegations of misleading accounting, other false and misleading statements concerning the company's credit portfolio and also claims related to claims of sexual harassment in a single class action litigation.¹⁶³ At the class certification stage, the *Signet* court found:

Plaintiffs burden at this stage is simply to propose a methodology for calculating damages that corresponds to its theory of liability. It has done so here. Dr. Hartzmark's purports to "us[e] the results of an event study along with the disclosures of firm-specific information" to measure "the level of artificial inflation in the prices of the Signet common stock" based upon "price reactions to disclosures revealing [Defendants'] alleged misstatements and omissions." (Hartzmark Rept. ,r 94.) "From this, daily levels of inflation can be calculated by adjusting the inflation measure for each day throughout the Class Period." (Id.) **This methodology, which applies on a class-wide basis, is capable of measuring the out-of-pocket losses suffered by the Class members.**¹⁶⁴

137. Moreover, unlike Mr. Deal, who I understand has never offered sworn testimony opining on the appropriate damages methodology at the class certification stage,¹⁶⁵ I have opined on the common damages methodology in over 20 matters, and in each one where the respective court has ruled on class certification prior to the case settling, the court credited my opinion on the existence of a common damages methodology.¹⁶⁶

¹⁶³ *In re Signet Jewelers Limited Sec. Litig.*, 2019 WL 3001084 (S.D.N.Y. 2019) at *6.

¹⁶⁴ *In re Signet Jewelers Limited Sec. Litig.*, 2019 WL 3001084 (S.D.N.Y. 2019) at *20 (emphasis added).

¹⁶⁵ Deal Tr. 50:2-50:7.

¹⁶⁶ *Laurence Rougier, et al. v. Applied Optoelectronics, Inc., et al.*, Memorandum and Recommendation, (S.D. Tx. Nov. 13, 2019), Dkt. 125 (which was adopted by the Court in Order Adopting Magistrate Judge's Memorandum and Recommendation entered December 20, 2019, Dkt. 131), p. 30 (finding that "Plaintiffs' proposed damages model comports with the requirements of Rule 23(b)(3) as set forth in *Comcast Corp. v. Behrend*, 569 U.S. 27 (2013)."). *Id.* at 31 (finding that "Furthermore, courts recognize event studies, like the one used by Dr. Hartzmark, as an accepted method for determining artificial inflation and out-of-pocket damages in suits involving fraud on the market liability."). *Id.* at 34-35 (finding that "Dr. Hartzmark's report and supplemental report describe at length his method for calculating the

138. Finally, the few Section 10(b) cases that have gone to trial illustrate that the issues Mr. Deal has raised concerning the inflation ribbon are premature and mistaken. In *Household* and *Vivendi*—two matters where there were jury verdicts—the courts accepted the very OOP damages methodology described in my Opening Report.¹⁶⁷

139. Moreover, these cases faced similar or greater complexities than this case does. For example, *Household* involved approximately 40 misrepresentations over a roughly 3.5 year period, while *Vivendi* involved 57 misrepresentations over a nearly-two-year period.¹⁶⁸ Yet in both of these cases, the trier of fact was able to construct actual

“but for” value of the stock, for disaggregating inflation or price fluctuations not related to the misrepresentations found by a jury, and how he would use the inflation ribbon to methodically calculate damages for each Class Member. Thus, unlike the plaintiffs in *BP I*, the Plaintiffs here have satisfied their burden to demonstrate a damages model that calculates artificial inflation, the but for price, and will disaggregate inflation unrelated to fraud. Also, as was the case for the post-explosion subclass the district court certified in *BP II*, there is no disconnect between Plaintiffs’ theory of liability and damages model in violation of *Comcast*.”) (citations omitted). *Id.* at 36 (“As detailed above, Plaintiffs’ method for demonstrating class-wide damages is consistent with its fraud on the market theory of liability, Dr. Hartzmark proposes a damage methodology that will disaggregate losses not attributable to fraud found by the jury, and class certification under Rule 23(b)(3) will not violate *Comcast*.”). *Id.* at 38 (finding that “Plaintiffs have also proposed a damages methodology that is common to the class and is properly tethered to their corrective disclosure theory of liability.”).

Christakis Vrakas, et al. v. U.S. Steel Corp., et al., Memorandum Order (W.D. Pa., December 31, 2019), 2019 U.S. Dist LEXIS 222783, at *20 (finding that “Plaintiffs cite several cases in this Circuit and elsewhere that affirm the appropriateness of the out-of-pocket methodology that Dr. Hartzmark proposes as a sufficient damages model for class certification purposes.” (footnote omitted)).

W. Palm Beach Police Pension Fund, et al. v. DFC Global Corp., et al., 2016 WL 4138613, at *13 (E.D. Pa. Aug. 4, 2016) (finding that “Dr. Hartzmark has data underlying his conclusions and [the defendants’ expert] just has noise”).

William D. Wallace, et al. v. IntraLinks et al., Opinion (S.D.N.Y., September 30, 2014), Dkt. 99, p. 19 (finding that “While calculating the proper damages based on the date of purchase and sale may be complicated, it does not demand excessive individual inquiry. Plaintiff’s proposed determination of damages by event study appears to be a workable methodology of determining damages on a class-wide basis that conforms to its theory of liability, thus meeting the requirements of *Comcast Corp. v. Behrand*, 133 S.Ct. 1426 (2013).”

¹⁶⁷ *Household* Verdict Form filed May 7, 2009 02 CV 5893; *In Re Vivendi Universal, S.A., Secs. Litig.*, Verdict Form filed February 2, 2010 02 Civ. 5571(RJH)(HBP)..

¹⁶⁸ *Id.*

inflation ribbons.¹⁶⁹ Review of these inflation ribbons further confirms that the issues Mr. Deal complains about are of no moment. For example, in each case, inflation varied significantly over time, and, in the case of *Vivendi*, even reached zero at one point during the class period – one of the issues Mr. Deal repeatedly suggests renders creation of an inflation ribbon impossible here.¹⁷⁰ Moreover, the verdict forms in *Household* and *Vivendi* underscore that determining the inflation ribbon is ultimately a factual question that plainly is premature at this stage.

140. Here, the common damages methodology I propose is flexible and will account for the “complexities” and whatever else the trier of fact determines to be the appropriate misstatements and corrective disclosures, as well as which claims they apply to and when the misstatements commenced. Thus, to the extent the trier of fact determines at a later stage that all or a portion of the information allegedly revealed on a date that introduced or removed artificial inflation is different than what I develop based on my analysis and assumptions as to liability, I would adjust my inflation ribbon accordingly. Once I adjust the inflation ribbon based on the findings of the Court or trier of fact, I then will use this as an input to my formula and applying it class-wide using my common damages methodology to calculate individual investor harm.

VII. CONCLUSION

1. Issues Mr. Deal Does Not Dispute

- Mr. Deal does not dispute that CenturyLink common stock and the 7.6% Note traded in efficient markets.
- Mr. Deal does not dispute that the out-of-pocket (“OOP”) damages methodology that I describe in my Opening Report is virtually universal standard, “typically used” and the appropriate methodology for calculating class-wide damages for claims under Section 10(b) of the Exchange Act or that it applies in this case.

¹⁶⁹ *Id.*

¹⁷⁰ *See, e.g.*, Deal Report, ¶¶12-13, 32, 39.

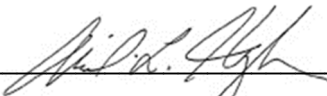
- Mr. Deal does not offer an explicit opinion, nor does he put forth evidence that there is an absence of price impact from either his examination of the alleged Front-End misstatements or the alleged Back-End corrective disclosures.

2. Issues on Which Mr. Deal and I Differ

- Mr. Deal's report and related analyses do not demonstrate an absence of price impact. As his report and deposition testimony make clear, Mr. Deal was not engaged, nor does he offer any opinion that there is a lack of price impact of CenturyLink Securities' prices from the misrepresentations and omissions alleged in the Complaint. The analyses Mr. Deal does provide are insufficient to show that Defendants' misstatements did not impact the price of CenturyLink securities. To the contrary, Mr. Deal's analyses support the opinion that there is no evidence of a lack of price impact.
- Mr. Deal's report and deposition testimony concerning my common damages methodology essentially amounts to an argument that it will be challenging to construct the inflation ribbon that will be applied class-wide to calculate individual investor OOP damages. This is incorrect; there are numerous economic and statistical tools that can be used to assist the trier of fact in determining how to construct the inflation ribbon. Based on my experience and my discussions with Plaintiffs' Counsel, my understanding is that it is irrelevant to class certification because issues concerning the construction of the inflation ribbon are issues that are common to the class.

I declare under penalty of perjury that the foregoing is true and correct.

RESPECTFULLY SUBMITTED THIS 4th DAY OF MAY 2020



Michael L. Hartzmark, Ph.D.

APPENDIX A

MICHAEL L. HARTZMARK, PH.D.

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PRESENT POSITIONS

HARTZMARK ECONOMICS LITIGATION PRACTICE, LLC

President (2013 - present)

Specializing in the application of economic, financial and accounting principles to securities, complex commercial, investment, intellectual property, antitrust and automotive litigation and regulatory matters

OFFICE OF THE ATTORNEY GENERAL – STATE OF NEW JERSEY

Independent Contractor (2015 - present)

MDA FINANCIAL, INC.

President (1981 - present)

FINRA (fka NATIONAL ASSOCIATION OF SECURITY DEALERS) Dispute Resolution

Member Arbitrator (2005 - present)

EDUCATION

- Ph.D. Department of Economics, the University of Chicago, 1984
(Doctoral Exams in Industrial Organization and Regulation; Public Finance)
- M.A. Department of Economics, the University of Chicago, 1982
- B.A. The University of Michigan (Economics, High Honors and Phi Beta Kappa), 1978

ACADEMIC HONORS AND FELLOWSHIPS

John M. Olin Faculty Fellowship, (George Stigler, Director) (1986 - 1987)

PEW Teaching Fellow, the University of Chicago (1980 - 1981)

Phi Beta Kappa, the University of Michigan (1978)

Parker Prize, in Labor Economics, University of Michigan (1978) -- Given for the best graduate or undergraduate paper in Labor Economics

GRANTS

Grant from the University of Chicago (1984). Center for the Study of Futures Prices: grant to analyze margin regulation for the Chicago Board of Trade Studies.

PROFESSIONAL EXPERIENCE

OFFICE OF THE ATTORNEY GENERAL – STATE OF NEW YORK

Independent Contractor (2013 - 2019)

CRA INTERNATIONAL, INC.

Independent Contractor (2015)

NAVIGANT ECONOMICS (FORMERLY CHICAGO PARTNERS, LLC)

Academic Affiliate (2012 - 2013)

Principal/Director (2008 - 2012)

Vice President (2004 - 2007)

DARMA, LLC

President (2005 - 2008)

PACIFIC BIOMETRICS, INC.

Interim Chief Financial Officer (2004 - 2006)

CRAGAR INDUSTRIES, INC.

Chairman, CEO, President and Treasurer (1993 - 2004)

MDA FINANCIAL, INC.

President (1981 - present)

FAHNESTOCK & Co., Inc. (now Oppenheimer & Co., Inc.)

Financial Consultant (Series 7 and Series 63) (2001 - 2003)

ECONOHIO CORPORATION

President (1989 - 1992)

LEXECON INC.

Senior Economist (1987 - 1989)

UNIVERSITY OF CHICAGO, Center for the Study of the Economy and the State, and the
Graduate School of Business (now the Chicago Booth School of Business)

John M. Olin Visiting Scholar (1986 - 1987)

UNIVERSITY OF MICHIGAN, Joint with Michigan Business School (now the Stephen M.
Ross School of Business) and Department of Economics

Assistant Professor (1984 - 1988)

Lecturer (1984)

COMMODITY FUTURES TRADING COMMISSION, Division of Economics and
Education, Washington, D.C.

Financial Economist (1982 - 1983)

UNIVERSITY OF CHICAGO, Department of Economics

Instructor for Economic Analysis (1981)

Research Assistant for A. C. Harberger (1982)

Research Assistant for Sam Peltzman (1981 - 1982)

U. S. DEPARTMENT OF THE TREASURY, Office of Tax Analysis, Washington, D.C.

Research Assistant (1981)

PUBLICATIONS

- “Understanding the Efficiency of the Market for Preferred Stock,” (with H. Nejat Seyhun), Virginia Law & Business Review, Volume 8, Number 2, Spring 2014.
- “An Economist's View of Amgen,” Law360, May 2, 2013.
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- “Luck Versus Forecast Ability: Determinants of Trader Performance in Futures Markets,” Journal of Business, January 1991. Also reprinted in Classic Futures: Lessons from the Past for the Electronic Age, by Lester Telser, Risk Books, March 2000.
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- “Regulating Futures Margin Requirements,” Review of Research on Futures Markets, Volume 5, Number 3, 1986.
- “The Effects of Changing Margin Levels on Futures Market Activity, the Composition of Traders in the Market, and Price Performance,” Journal of Business, April 1986.
- “Individual Income Taxation, 1947-1979,” (with Eugene Steuerle), National Tax Journal, June 1981.

BOARDS

- POWHATAN BUILDING CORPORATION, Director, Treasurer, (2010 - 2016)
- MIDTOWN EDUCATIONAL FOUNDATION, Auxiliary Board Member, (2009 - 2013)
- GLOBAL ENTERTAINMENT CORPORATION (Formerly AMEX: GEE, currently not listed); Director, Audit Committee Member (2004 - 2008);
- THE BOARD INSTITUTE (private software company), Financial Advisory Board (2004 - 2006)
- SHAKER INVESTMENTS, Financial Advisory Board (1992 - 2005)
- PACIFIC BIOMETRICS, INC. (OTC BB: PBMC currently not listed and renamed as Pacific Biomarkers), Director and Chairman of Audit Committee (2002 - 2004)
- CRAGAR INDUSTRIES, INC. (Formerly OTC BB: CRGR, company sold); Director and Chairman of the Board (1993 - 2004)

EXPERT REPORTS, DECLARATIONS AND DISCLOSURES PAST FOUR YEARS

In Re MF Global Holdings Limited Securities Litigation. U.S. District Court for the Southern District of New York; Report (9/15/2014); Damages Report (8/21/2015); Reply Report (9/21/2015); Deposition (11/23/2015).

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The Arbitrage Fund, on behalf of itself and all other similarly situated shareholders of Exactech, Inc. v. William Petty, et al. Circuit Court of Florida, Eleventh Judicial Circuit, Miami-Dade County; Report (12/6/2018).

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Appendix B

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“Fired CenturyLink Worker Files Lawsuit Alleging Fraud,” *The Arizona Republic*, June 18, 2017.

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“Moody’s says CenturyLink’s class-action lawsuit is probably limited, but potentially credit negative,” Moody’s Investors Service Press Release, June 26, 2017.

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“New post-deal management structure plays to strengths,” *Bank of America Merrill Lynch*, June 22, 2017.

“The Roz Report: A Risk Framework for Recent CenturyLink Allegations,” *Barclays*, June 26, 2017.

“Introducing Combined LVL Model; More Stable Ground but Questions Remain,” *Cowen and Company*, July 5, 2017.

“CenturyLink Sued by Minnesota Attorney General on Overbilling Customers; Cutting FVE to \$30,” *Morningstar*, July 13, 2017.

“2Q preview & model book - Weathering tough 2Q and looking for better 2H,” *Bank of America Merrill Lynch*, July 17, 2017.

“2Q17 Preview: Counting Down to Level 3,” *Morgan Stanley*, July 19, 2017.

“C2Q17 Telco Services Preview,” *Cowen and Company*, July 24, 2017.

“Remain on Sidelines as Both CTL and LVL Look for 2H17 Improvement,” *Cowen and Company*, August 3, 2017.

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Consolidated Class Action Complaint, *In Re: CenturyLink Sales Practices and Securities Litigation*, MDL No. 17-2795 (MJD/KMM) (D. Minn. June 25, 2018), ECF. 143.

CenturyLink Memorandum of Law & Order, dated July 30, 2019.

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Aranaz v. Catalyst Pharmaceutical Partners, Inc. et al., 302 F.R.D. 657 (S.D. Fla. 2014).

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Carpenters Pension Tr. Fund of St. Louis v. Barclays PLC, 310 F.R.D. 69 (S.D.N.Y. 2015).

Cheney v. Cyberguard Corp., 213 F.R.D. 484 (S.D. Fla. 2003).

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City of Ann Arbor Emps’ Ret. Sys. v. Sonoco Prods. Co., 270 F.R.D. 247 (D.S.C. 2010).

City of Pontiac Genl. Emps. Retirement Syst. v. Dell Inc., 2018 WL 1558571 (W.D. Tex. Mar. 29, 2018).

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Halliburton Co, et al. v. Erica P. John Fund, Inc., 134 S.Ct. 2398 (2014).

Household Verdict Form filed May 7, 2009 02 CV 5893.

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Appendix B
Materials Relied Upon in the Opening and Reply Report

COURT DOCUMENTS, CONT'D.

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In re Cobalt Intl. Energy, Inc., Sec. Litig., 2017 WL 2608243 (S.D. Tex. 2017).
In re Computer Sciences Corp. Securities Litig., 288 F.R.D. 112 (E.D. Va. 2012).
In re Diamond Foods, Inc., 295 F.R.D. 240 (N.D. Cal. 2013).
In re DVI, Inc. Sec. Litig., 249 F.R.D. 196 (E.D. Pa. 2008).
In re DVI, Inc. Sec. Litig., 639 F.3d 623 (3d Cir. 2011).
In re Dynex Capital, Inc. Sec. Litig., U.S. Dist. LEXIS 22484 (S.D.N.Y. Mar. 7, 2011).
In re Enron Corp. Sec. Derivative & "ERISA" Litig., 529 F. Supp. 2d 644 (S.D. Tex. 2006).
In re Groupon, Inc. Sec. Litig., 2015 WL 1043321 (N.D. Ill. 2015).
In re HealthSouth Corp. Sec. Litig., 257 F.R.D. 260 (N.D. Ala. 2009).
In re HealthSouth Corp. Sec. Litig., 261 F.R.D. 616 (N.D. Ala. 2009).
In re Mills Corp. Sec. Litig., 257 F.R.D. 101 (E.D. Va. 2009).
In re Netbank, Inc. Securities Litig., 259 F.R.D. 656 (N.D. Ga. 2009).
In re PolyMedica Corp. Sec. Litig., 453 F. Supp. 2d 260 (D. Mass. 2006).
In re Scientific-Atlanta, 571 F. Supp. 2d 1315 (N.D. Ga. 2007).
In re Signet Jewelers Limited Sec. Litig., 2019 WL 3001084 (S.D.N.Y. July 10, 2019); Expert Report of Allen Ferrell Ph.D.,
In Re Signet Jewelers Limited Securities Litigation, April 26, 2019, S.D.N.Y. Case No. 1:16-cv-06725-CM, Dkt. 148-1
In re Vivendi Universal, S.A., Sec. Litig., 634 F. Supp. 2d 352 (S.D.N.Y. 2009).
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Appendix B

Materials Relied Upon in the Opening and Reply Report

ACADEMIC PAPERS AND BOOKS, CONT'D.

William F. Maxwell and Clifford P. Stephens, *The Wealth Effects of Repurchases on Bondholders*, 58 J. Fin. 895 (2003).
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DATA

Bloomberg stock price, dividend and volume data for CenturyLink Inc. common stock, August 2012 – December 2017.
 Quarterly institutional holdings in CenturyLink Inc. common stock, December 31, 2012 – December 31, 2017, from S&P Capital IQ.
 Quarterly institutional holdings for the CenturyLink Inc. 7.6% Note, March 31, 2013 – December 31, 2017, from Bloomberg.
 Miscellaneous stock return index data, August 2012 – December 2017, from Bloomberg: the S&P 500 Total Return Index (SPTR Index), S&P 500 Communication Services Sector Total Return Index (SPTRTELS INDEX), S&P 500 Diversified Telecom Services Industry GICS Level 3 Total Return Index (S5DITETR INDEX, data on non-total return version of this index (S5DIVT INDEX) before 6/27/2013), S&P Composite 1500 Telecommunication Services (Sector) Total Return Index (SPTRSC50 INDEX), S&P Supercomposite Diversified Telecom Services Industry GICS Level 3 Total Return Index (STRDIVT INDEX, data on non-total return version of this index (S15DIVT INDEX) before 11/15/2013), and S&P Supercomposite Alternative Carriers Sub Industry Total Return Index (STRALTC INDEX).
 Bloomberg bond index data for the ICE BofAML 15+ Year BB Cash Pay High Yield Index (J8A1), August 2012 – December 2017:
 Bloomberg Treasury Notes prices for CUSIP 912810QC5, August 2012 – December 2017.
 Daily weights of CenturyLink Inc. common stock in the following indexes: S&P 500 Communication Services Sector Total Return Index (SPTRTELS INDEX), S&P 500 Diversified Telecom Services Industry GICS Level 3 Total Return Index (S5DITETR INDEX), S&P Composite 1500 Telecommunication Services (Sector) Total Return Index (SPTRSC50 INDEX), S&P Supercomposite Diversified Telecom Services Industry GICS Level 3 Total Return Index (STRDIVT INDEX), and S&P Supercomposite Alternative Carriers Sub Industry Total Return Index (STRALTC INDEX), August 2012 – December 2017, from Bloomberg.
 Bloomberg short interest in CenturyLink Inc. common stock, February 2013 – July 2017.
 Bloomberg bid and ask prices for CenturyLink Inc. common stock, February 2013 – July 2017.
 Bloomberg total analyst recommendations for CenturyLink Inc. common stock, February 2013 – July 2017.
 Number of analysts providing consensus I/B/E/S estimates for CenturyLink Inc. common stock, March 2013 – July 2017, from S&P Capital IQ.
 One Minute Interval Intraday Stock Data for CenturyLink, Inc. common stock, June 16, 2017 – July 12, 2017 and Tick Data US Equity Trade, Quote and One-Minute Data File Format Document version 3.8, from Tick Data.
 Date and time stamps for CenturyLink Inc. earnings releases, September 2012 – July 2017, from PR Newswire (U.S.) on Factiva.
 List of common stocks on the NYSE or NASDAQ, market capitalization, bid price, ask price, total analyst recommendations, Primary Security Composite Exchange Code of members at the end of 2013 – 2016 from Bloomberg.
 List of common stocks on the NYSE or NASDAQ, market capitalization, Primary Security Composite Exchange Code of members on March 1, 2013, November 3, 2014, and July 12, 2017 from Bloomberg.
 TRACE data supplied by FINRA (excel workbooks) pursuant to subpoena, files “CA Trades Jul012012 through Dec312012 (DIVER).xlsx” and “CA Trades Jan012013 through Sep272019 (DIVER).xlsx”; excel workbook supplied by FINRA pursuant to subpoena entitled “Trade Data Fields and Definitions for CA Bonds (DIVER-CA Trade Details) May172019.xlsx.”
 Amount outstanding for the CenturyLink Inc. 7.6% Note from Bloomberg, March 2013 – November 2019.
 Credit ratings for the CenturyLink Inc. 7.6% Note from S&P, Moody’s, and Fitch, obtained from Bloomberg.

Appendix B
Materials Relied Upon in the Opening and Reply Report

CASE DOCUMENTS

CTLMNSEC00909169.
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17 C.F.R. § 240.10b-5 (2011).
15 U.S.C. § 78c(a)(38).
15 U.S.C. §§ 78p(b), 78p(c), 78p(a) (2011).
15 U.S.C. § 78u-4(e)(1).

All other specific materials and information otherwise described or set forth in the body of this Reply Report, the Opening Report, Exhibits or Appendices to the Opening Report.